OCTOBER 1954

American Engineer

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● **THE VITAL SHIFT**

By

H. E. Chiles, Jr., P.E.,

President, The Western Company

Mr. Chiles Tells How the Transition from Engineer to Manager Can Be Made

. . . *Also*

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—AE—

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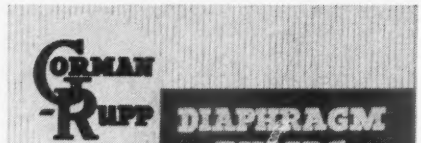

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—AE—

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—AE—

TUNNEL CONSTRUCTION BULLETIN — Mayo Tunnel & Mine Equipment have issued a new Bulletin No. 14 which illustrates and describes equipment for tunnel construction. Also available is a Metric Wall Chart which lists conversions of feet to meters, decimals to feet and other data valuable to engineers. Both can be obtained by writing Mayo Tunnel and Mine Equipment, P.O. Box 1413, Lancaster, Pa.

—AE—

CONSTRUCTION—A new construction equipment bulletin published by the Blaw-Knox Company, contains information on the B-K construction package—all equipment necessary for the construction of roads, highways and airports, or for the production of ready mixed concrete. Items listed are base pavers, wideners, batching and mixing plants, clamshell buckets, concrete buckets, concrete finishers and spreaders, steel forms, subgraders, truck mixers, and parts and services. To obtain Bulletin Number 2463, write Equipment Division, Blaw-Knox Company, Pittsburgh 38, Pa.

Letters

Mr. Forrest's Article . . .

Dear Editor:

. . . T. Carr Forrest, Jr., president of the National Society of Professional Engineers, in an article in the *American Engineer*, March, 1954, under caption of "Professionalism or Unionism," which was reprinted in the *Midwest Engineer*, Vol. 6, No. 12, May, 1954, said:

> The idea of unions for engineers is not a new one. Union activities for professional employees can be traced to the period immediately following World War I when the American Association of Engineers organized and directed a collective bargaining campaign for professional engineers before the U. S. Railway Wage Board in the interest of technical employees of the railroads. That the issue of professionalism vs. unionism is also not new is illustrated by the statement of AAE that ". . . our action stirred up animosity: brought on us the suspicion of employers that we were a 'glorified labor union . . ." And it is also interesting to note the parallel of 1919 to today; ". . . the entire campaign conformed to the highest principles of professional conduct." So it is seen that the idea of the "professional" union also is not particularly new.

By the very act of writing a broad dissertation on "Professionalism or Unionism" Mr. Forrest assumes the role of an authority on the subject. He must, then, know the basic qualities which mark a union and its characteristic methods and activities. He must, for instance, know that

(1) a union is composed of employees, affiliated for the sole purpose of "bargaining" with employers—that it is never an association of employers and employees working together for improvement of the economic status of all members of the profession to which both employers and employees belong, and that

(2) unions are formed to create pressures which make the employees, theoretically at least, as strong in bargaining as their employers, and that the use of "pressure" is their distinctive characteristic.

If Mr. Forrest had bothered to go back to original news stories, to primary sources, such as *Engineering News-Record*, during the period of 1918-1920, he would have recognized the absurdity of his statement that A. A. E. activities in behalf of railway technical employees during that period were the beginning of "unionism." He would have learned that—

(1) American Association of Engineers was not a "union" but an inclusive association of engineers, employers and employees: and that

(2) Employee engineers were represented in the campaign by outstanding consulting and executive engineers, many of them top executives of the railways involved:* and also that

(3) The hearings were initiated by the U. S. Railway Wage Board which invited the unorganized technical employees to lay their complaints before that agency; that American Association of Engineers did not organize the engineers and initiate the campaign; it offered its services to the unorganized technical men solely as their representative; and, finally that

(4) At no stage in the hearings did the employees or the Association threaten, or even suggest retaliation if the pleas of the technical men were denied.

---

* Edmund T. Perkins, Isham Randolph, and Francis R. Weller were spokesmen in the first hearing before the Railway Wage Board, all prominent consultants. W. H. Finley, then president of the C. & N. W. Railroad Co., Willard Beahan, First Assistant Engineer of the New York Central Railroad, and W. W. K. Sparrow, Chief Engineer of the C. M. St. P. & P. Railroad, carried the fight to the regional boards when the U. S. Railway Wage Board decentralized the hearings.

(*Continued on page* 5)

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American Engineer

OCTOBER 1954

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The American Engineer is published monthly by the National Society of Professional Engineers, 1121 15th St., N. W., Washington 5, D. C. Entered as Second Class Matter at the Post Office, Washington, D. C., under act of March 3, 1879. Copyright, 1954, by the National Society of Professional Engineers. Not responsible for opinions expressed in signed articles. Subscription Rates: $2 per year in advance to members of NSPE and its Affiliated Societies; $3 per year in advance to non-members in U. S. A. and its possessions, Canada, and Mexico. Foreign, $4 per year. Single copy, 35c.

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS FOUNDED 1934

Letters

(*Continued from page 3*)

Throughout the campaign American Association of Engineers relied unreservedly on the basic fair mindedness of the employers of engineers and of the public which would eventually pay the bill for increases in the salaries of railway technical men. The appeal was wholly factual, not emctional. The Association showed that the technical men had received no advance in compensation during a period when living costs had increased 63 per cent. They showed also that, despite the time and money spent on engineering training, engineers were actually, in some cases, receiving less than the non-professional employees whose work they supervised or directed, and in general received salaries too low to compensate them for the services they rendered and for their investment in training, in comparison with non-technical employee wages. They cited figures to prove that technically trained men were leaving the service of the railways and that the railways were facing a shortage of technically trained workers because of the inequities apparent in salary schedules. . . .

Mr. Forrest's quotation that A. A. E.'s action for railway technical men "brought on us the suspicion of employers that we were a 'glorified labor union' " is deliberately misleading quoted out of context, because it leaves the impression that the suspicion was justified. His statement that "It is also interesting to note the parallel of 1919 to today: 'the entire campaign conformed to the highest principles of professional conduct,' " is innuendo quite unworthy of the officer of one engineering society speaking of another reputable organization of engineers. There is no parallel between the action of A. A. E. in 1918-1919-1920 and that of the unions of professional engineers today, restricted to employees, banded together to exert economic pressure and if necessary resort to coercive measures in order to win their demands. . . .

It is doubtful that Mr. Forrest has not heard of the valiant work that A. A. E. did between 1937 and 1947 to clarify the status of professional employees under the Wagner Act and bring about revision which would protect engineers from involuntary inclusion in heterogeneous labor unions. It was A. A. E. which in 1937-1938-1939 sounded the alarm to show that engineers were subject to such inclusion and that they were actually, against their will being forced to accept labor union representation. During this period other societies contented themselves with adjuring engineers not to sacrifice professionalism by joining unions, overlooking the provisions of the Wagner Act which made them captives of unions chosen to represent units described by the National Labor Relations Board as "appropriate" in which engineers were involuntarily included. Because of the informative articles which A. A. E. published in "Professional Engineer," based on a systematic study of weekly reports of the National Labor Relations Board, it was swamped by appeals from beleaguered engineers all over the country. To help these men, and at a great cost in money and time, A. A. E. brought out in 1944 a handbook, called "Technologists' Stake in the Wagner Act," which revealed to engineers their exact status in the Act, and the most practical methods of defending their independence—their *real* freedom of association." This was the only authoritative study of the impact of the Act on professional employees available to engineers subject to the Act until the Taft-Hartley Act was passed, and it was an important factor in the constructive changes made by the Taft-Hartley Act. . . .

We feel that not only has a great injustice been done the American Association of Engineers, but a greater injustice to many of the profession's outstanding engineers who gave generously of their time to make possible the Association's excellent record of accomplishments in the field of "human engineering" over the past forty years. We ask that your society extend us the professional courtesy of a public retraction by the publication of this letter in the *American Engineer*. In the spirit of fair play, I do so request.

H. A. WAGNER, Past President,
American Association of Engineers
Chicago, Ill.

►***Editor's Note:*** **Mr. Wagner's letter was referred to Mr. T. Carr Forrest, Jr., for comment, and he replied as follows: "The basis for my comments in the article referred to by Mr. Wagner appeared in the Prologue of the 1944 publication of the American Association of Engineers titled 'Technologists' Stake in the Wagner Act.' The portion referred to is as follows:**

" 'Twenty-five years ago American Association of Engineers organized and directed the first major collective bargaining campaign for professional engineers. We appeared before the U. S. Railway Wage Board to seek well deserved pay increases for technical employees of the railroads. We were successful. We resorted to no coercive tac-

(*Continued on page 40*)

Additional Letters of Interest Will Be Found On Page 40

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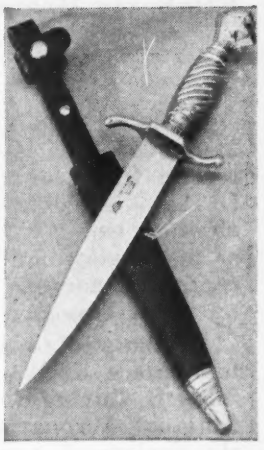

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Professional News in Capsule Form

Canada's Hon. Clarence D. Howe Is Guggenheim Medalist for 1954 ● Scientific Manpower Plea Is Addressed to Senator Wiley ● H. R. Vaughan and E. E. Kimberly Become AIEE Fellows ● Report on Executive Bonuses Is Released ● Other Items of Interest

Aviation's Daniel Guggenheim Medal for 1954 is to be awarded to The Right Honorable Clarence D. Howe, a well-known Canadian engineer who is currently serving as his Government's minister of trade and commerce and minister of defense production.

Presentation of the award will take place in Los Angeles, October 8, during a session of the National Aeronautic Meeting of the Society of Automotive Engineers, which sponsors the medal jointly with the American Society of Mechanical Engineers and the Institute of Aeronautical Sciences.

Mr. Howe, who is a native of Waltham, Mass., and a 1907 graduate of M.I.T., is being cited for "initiating and organizing commercial air routes and services, promoting aeronautical research, development and production of aircraft and engines, and advancing the art of aeronautics."

* * *

A plea for more adequate use of scientific manpower on the part of national administrators has recently been made by Joseph O. Hirschfelder, director of the Naval Research Laboratory of the University of Wisconsin. Professor Hirschfelder, who is also chairman of the board of editors of the Atomic Energy Commission's book, "The Effects of Atomic Weapons," made known his views on the manpower subject in a letter to Senator Alexander Wiley of Wisconsin. The letter was later inserted in the Congressional Record.

Professor Hirschfelder said that drafting graduate students who are studying in scientific fields of practical military value is seriously endangering the defensive position of the United States. Stating that only 10,700 graduate students per year get degrees in scientific subjects and pointing out that during the past year 3,500 graduate students working along scientific lines were called in the draft, he urged that steps be taken to stop this "very severe decrease" in the number of students being trained in scientific subjects. He proposed that "instead of drafting these young men, we make a serious effort to train them along military lines at the same time they are going to school."

Professor Hirschfelder also scored the fact "that no effort is being made to maintain the interest of those [civilian] scientists who served in various military technological capacities during the past war."

* * *

Two NSPE members—Harold R. Vaughan of Kansas City, Mo., and Emerson Edward Kimberly of Columbus, O.—are among the sixteen leading electrical engineers recently elected fellows of the American Institute of Elecal Engineers.

Mr. Vaughan, a member of the Missouri SPE, is district manager in charge of engineering and service for the Westinghouse Electric Corporation in Kansas City. Mr. Kimberly, who also belongs to the Ohio SPE, is a professor of electrical engineering at Ohio State University.

The honor of "fellow" is conferred on AIEE members who have achieved particular distinction in their profession.

* * *

Profits before rather than after taxes are being used as a base for computing executive bonuses by an increasing number of companies, according to a report on incentives for executives recently issued by the Executive Compensation Service of the American Management Association.

The report, which is based on analysis of close to 400 current incentive plans for executives of business and industry, also shows that firms engaged in wholesale and retail trade pay the highest bonuses (nearly 60 per cent of salary is average among such companies that have incentive compensation plans), while construction companies are a close second with nearly 53 per cent of salary. The lowest bonuses are paid by utilities (less than 9 per cent on the average) and financial concerns (about 15 per cent). In the middle of the picture are durable goods manufacturers (about 45 per cent), non-durable

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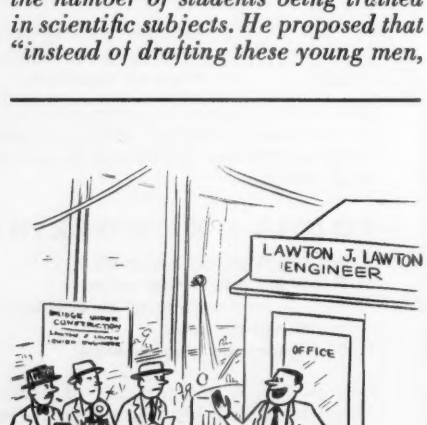

It all began one day when for my birthday I received a little erector set!

goods manufacturers (somewhat over 40 per cent), and petroleum and coal-mining companies (approximately 33 per cent).

* * *

NSPE President Clarence T. Shoch will be a special guest of the American Institute of Consulting Engineers at the latter organization's 1954 Annual Dinner. The banquet is to be held at the Waldorf-Astoria in New York City on October 19. It will mark the presentation of the Institute's Award of Merit to the Hon. Herbert Hoover and the Hoover Medal to Alfred P. Sloan, Jr.

* * *

Charles F. Kettering, world-famous engineer and inventor and one of the holders of the NSPE Award, has most recently been in the news for his invention of a self-starter for dehumidifiers. Patent rights for the new invention were assigned to the General Motors Corporation, which Mr. Kettering now serves as a research consultant, having retired from the vice presidency in 1947.

Among his other more prominent inventions have been the electric cash register, the two-cycle diesel engine, a high-compression engine, and a new refrigerant.

Mr. Kettering received the NSPE Award for distinguished service to the profession in 1953.

* * *

The Appendix to the Congressional Record of September 1st includes a speech on "The Engineer's Responsibilities Today," which was delivered by J. T. Ryan, Jr., at the commencement exercises of Indiana Technical College in Fort Wayne. "An engineer, if he is a good engineer, must always be a creative thinker," said Mr. Ryan, "and this ability to be creative, to bring new ideas and concepts into being, to produce new methods, new designs, new formulas, is the very basis of our engineering progress."

The speech was inserted in the Record by Senator Homer E. Capehart of Indiana.

* * *

Professor Harold O. Bolz has been named to the newly-authorized position of associate dean of the College of Engineering of The Ohio State University. To accept the new position in Columbus, Professor Bolz left the post as head of the General Engineering Department of Purdue University, Lafayette, Indiana.

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have recently been announced by the Illinois Institute of Technology, Chicago, Ill.

A four-year, $2,400 program has been established at the Institute by the Corn Products Refining Company as the firm's contribution to helping alleviate the need for science and engineering graduates. The company plans to award a scholarship annually to an entering freshman; the award will provide $600 in tuition each year for a four-year term. For the first year of the grant, however, Corn Products is presenting a scholarship to one student in each of the undergraduate classes. Recipients of the first awards are Stephen J. Sekula, Dunkirk, N. Y.; Alvin Pshaenich, Chicago; and Vincent M. Sarich, Chicago. They are students in chemical engineering, electrical engineering, and chemistry respectively.

The second announced grant is a $1,000 tuition scholarship established by the National Association of Power Engineers. The plan has been set up to encourage higher education in the fields of mechanical, chemical or electrical engineering among the sons and daughters of active or deceased members of the Association. First recipient of the award, which will represent $250 in tuition annually, is Ralph W. Bourne, Jr., of Charlestown, Ind., who will study electrical engineering.

* * *

"The New Atomic Energy Law—What It Means to Industry" was the theme of a two-day meeting at the Plaza Hotel in New York City, September 27-28, sponsored by the Atomic Industrial Forum. Representatives of government, industry, labor, and the legal profession were among those present to take part in the panel discussions and hear the other leading speakers.

Dr. T. Keith Glennan, president of the Case Institute of Technology and a former U. S. Atomic Energy Commissioner, whose suggestions led directly to the establishment of the Forum, delivered the featured address on "The New Industry-Government Partnership."

* * *

Case Institute of Technology has announced that it is again making its research facilities and talent available to the community by undertaking a research program on industrial waste disposal in the Cleveland area in cooperation with a number of local companies.

The program has been endorsed by the Committee on Industrial Wastes of the Cleveland Chamber of Commerce and by the Ohio Department of Health. Professor George E. Barnes, head of Case's Civil Engineering and Engineering Mechanics Department, will direct the study. Working with him will be Dr. Leon W. Weinberger, assistant professor of civil and sanitary engineering.

* * *

October meetings of interest to engineers include the following:

Oct. 11-15: Fall General Meeting of the American Institute of Electrical Engineers, Morrison Hotel, Chicago, Ill.

Oct. 14-15: National Conference on Industrial Hydraulics, Sheraton Hotel, Chicago, Ill. Sponsored by the graduate school of the Illinois Institute of Technology and Armour Research Foundation.

Oct. 18-19: Joint Lubrication Conference of the American Society of Mechanical Engineers and the American Society of Lubrication Engineers, Lord Baltimore Hotel, Baltimore, Md.

* * *

Announcement has recently been made of the appointment of Charles H. B. Hotchkiss of Ridgewood, N. J., as editor of the Journal of The American Society of Heating and Ventilating Engineers. Mr. Hotchkiss has had extensive experience in both engineering and publishing. He holds B.S. and M.E. degrees from Pennsylvania State College and is a registered professional engineer in the State of New York.

* * *

Dr. Frank J. Soday, vice president and director of research and development for The Chemstrand Corporation, Decatur, Alabama, has recently been elected president of the Southern Association of Science and Industry. He previously had served as vice president at large of the organization. A well-known chemical engineer, Dr. Soday holds approximately 130 U.S. patents principally in the field of petrochemicals.

* * *

"Science, Engineering, Research for Human Well-Being" is the theme that has been selected by the Polytechnic Institute of Brooklyn for its centennial celebration which is being observed during the 1954-55 academic year. Chartered in 1854 as the Brooklyn Collegiate and Polytechnic Institute, the school admitted its first class of 267 students in September, 1855. Now its total enrollment is over 6,500 in graduate and undergraduate schools.

A number of national meetings will be held at the school during the celebration, including the annual convention of the American Society of Safety Engineers scheduled for October.

In announcing the plans for the celebration, Polytechnic President Harry S. Rogers pointed out that: "Alongside the vigorous philosophy of western man we must range the genius of the scientists and engineers, if we are to understand fully the rise of the greatness of modern civilization. . . . To understand modern society, it is important to attain a perspective which reveals the untold, incalculable benefits that have accrued to humankind through the disciplined and dedicated years spent by men of talent in the hidden laboratories of the world."

Employment Interview Booklet Is Available

Some Suggestions for Interviewing Scientists and Engineers for Employment in the Federal Service is the name of a 23-page booklet available from the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C.

The booklet sets forth a number of the latest interviewing techniques and offers suggestions for establishing job criteria, weighting and evaluating various phases of jobs, and making use of past employment records as a measure of current suitability.

The code number of the manual, which can also be of value to applicants for Federal engineering positions and non-Governmental personnel officers, is PB 111371. Its cost is 50 cents.

Prepare Now to Make

THE VITAL SHIFT

By

H. E. CHILES, JR., P.E.,

Member, Texas SPE and President, The Western Company

Is the Engineer *Trained* to be a Manager? No, Says the Author, but He Can *Learn* How to Make the Vital Shift. Read What This Successful Young Engineer and Executive Has Found Out About Leadership.

Above are shown two highly successful engineers who learned how to be executives. From left to right, ex-engineers Alfred E. Perlman, President of the New York Central System, and Benjamin G. Fairless, Chairman of the Board of U. S. Steel, chat with Perry M. Shoemaker, President of the Delaware, Lackawanna and Western Railway.

THE boy sitting across the desk from me might have been any one of our forty or fifty engineers, young, intelligent, and ambitious. The thing that bothered was the fact that he wasn't just any one of them. He was a very special one, a chap I had been keeping an eye on for some time—and he was leaving us to go into business for himself.

"Are you sure," I asked him, "that you have thought this thing through, and that you are reasonably sure of your chances for success?"

"Yes, sir," he replied. "You see, I helped to design the product, and I know just about all there is to know about it. I know people in the oil business, too, and that should help."

"I have always felt," he continued, "that if a man is smart enough to work in the engineering side of a business, he is probably smart enough to manage the business." The boy paused for a moment, then went on. "I certainly don't mean any disrespect, Mr. Chiles, but isn't that what you did?"

He had me right where he wanted me, of course, and a few minutes later he was walking out of the office with my best wishes for a successful future.

In the days following that interview I thought time and again of his words, ". . . isn't that what you did?" Somewhat grimly I have admitted to myself that the boy was probably speaking more truth than he knew. If so, he will probably experience more headaches and heartaches within the next few months than he ever knew existed! For the lot of the average engineer moving into the ranks of management is frequently one of frustration and even failure.

It is difficult to see at first why this should be so. If there was ever a demand for engineering skill and knowledge in the ranks of middle and top management, this is the time. Advances in technological techniques in every field of endeavor have made it essential for managers to understand technical language, and to be familiar with the capabilities and limitations of machines and equipment. Even our accounting people are studying electronics at night school in order to better understand the part being played in industry by electronic equipment in the accounting office.

WITH this demand for engineering knowledge and skill, one might think that the engineer would find an easy path leading him swiftly and surely to the inner sanctum of top management. This is unfortunately not the case. As a matter of fact, a number of companies have learned that the

Engineers aspiring to make the "vital shift" to management positions must realize that they need more than just their technical skills, says Mr. Chiles. They will have to learn completely new techniques to transform themselves into competent managers and executives.

man who is most difficult to absorb into the ranks of management is more often an engineer than not. Mr. E. G. Uhl, Vice President of Engineering of the Glenn L. Martin Aircraft Company, has been quoted in a number of recent articles as saying that the one class of employee which has given them the most trouble, whether managing or being managed, is the engineer. Why should this be the case? Well, suppose we take a look at what happens to a man, whether engineer or not, when he becomes a manager.

In one of his famous discussions, Lawrence Appley of the American Management Association described the transition from specialist to generalist which must take place in every man who succeeds in a management job. The irony of the transition lies in the fact that in order to be deemed qualified for the generalized demands of management, a man usually has to prove that he is one of the best specialists in his particular specialty! No wonder, then, that so many of us found it difficult to make the change. We were not really aware that a transition was required—and by the time we had learned, we were frequently so battered and worn that we wondered whether it was worth the struggle.

This is what Appley calls *The Vital Shift,* and it is well named. People aspiring to management positions need to recognize that they are not talking about something that is simply a higher degree of the technical skills and know-how which they already possess. On the contrary, this business of managing, whether it be a drilling crew or a refinery, demands a new group of skills, new techniques, and new fields of knowledge. Unless one learns this, he is foredoomed to failure as a manager. The earlier one learns it, the better is his chance for success.

No, it is not just a matter of being "smart enough," as the boy in my office apparently thought. It does not follow that a good lawyer will be a good doctor. Success in one field does not automatically guarantee success in every other field—and management *is* a different field from engineering.

But why should it be more difficult for engineers to make this transition of which we are speaking than it is for men coming from other branches of industry? If there is a real need for engineers in management jobs, why is it that engineers so frequently fail to earn places for themselves among the ranks of top executives?

For the answers to these questions I believe that we have to go back to the engineer's early training. All who have undergone the difficult regimen which leads to an engineering degree will recall that from the very outset we were trained to eliminate the human element from our calculations. Humans are fallible, we were told, they are inconsistent and unreliable, and they have no place in engineering plans.

Coupled with this "elimination of human error" was the concept of proof. A solution to a problem was worse than useless unless it was accompanied with proof positive that the solution was a correct one. Gradually, then, we learned to feel our way through experiment after experiment, proving each step before we ventured forth upon the next. Mind you, I do not decry this approach to an *engineering* problem. When I cross a bridge in my car, I hope that the engineer who designed it had some justification stronger than a "hunch" for his specifications!

Finally, it seems to me that we were trained to have a narrow concept of accuracy. If the correct answer was 2.175, then an answer of 2.173 was wrong. I can't remember ever being told that I was "almost right," or that I was "close enough." No, I was either right, or I was wrong. Again let me say that I have no fault to find with this engineering concept as it applies to engineering. But do these attitudes and concepts fit the engineer for a management position?

Let us consider for a moment this matter of the human element. Management has been defined as any number of things, but for our purpose it will suffice to say that management is the art of getting things done through other people. If this be management, then the human element certainly enters into it. In fact, it is probably the most important single consideration! Consider, then, the poor engineer who has been trained to avoid human frailties, and who is suddenly placed in a position where his every act and decision must be tempered by careful consideration of the very frailties about which he has so studiously avoided learning anything!

And what about proof? Management decisions must be based on the best information available, but such information can seldom if ever be called proof. If an automobile manufacturer never brought out a new design until he could *prove* to the stockholders that it would increase sales 10 per cent, he would never get a new design on the road. If I had to prove to my Executive Committee that our Research Division was going to come up with a new product next month before they would approve the research budget, I'm afraid our research program would die in infancy. Don't misunderstand me. Managers must make decisions, and they must be based on accurate information, and reflect mature judgment—but it is a rare day when a manager can prove that his decision is right until he has had a chance to wait and see. So again, what of the engineer who has been trained to demand proof for each step of the way? Should we be surprised if he is hesitant and uncertain when called upon to make decisions and take action based upon assumptions which cannot be proven?

And how about his predilection for accuracy and precision? It is one thing to declare that "slip ring tolerance shall be at least .002 inches," and quite another to tell the employee relations department how much it should cost them to hire five engineers. One can determine fairly well the rate of fluid evaporation in a laboratory vessel, but how does one determine the progress a research scientist should make in a thirty day period?

It is no wonder that men who are trained to work with "things" find it difficult to work with people. The wonder is that the engineer, who finds himself asked to do things in a way which causes every trained response within him to cry out in protest, is able to succeed in management as often as he does.

The answer to this seeming anomaly lies in the fact that many of the attributes which go to make good engineers are also at a premium in good managers. Intelligence, for example, is certainly an asset to any manager; and engineers as a group rank high among the professions in this factor. Then, too, the engineer tends to have an analytical mind, and to possess orderly thought processes. These can be every bit as valuable to a manager as they can to an engineer. Perhaps even more so, because the manager isn't able to "prove" that his thinking is right before he makes a decision. The clearer his thinking, the better his judgment is apt to be. Lastly, the engineer has been trained to be objective. Even though management is wrapped up with "human relations," the manager has to be objective in his dealings with others—and in this faculty the engineer has a head start.

So the engineer's cause is anything but a forlorn one. His only problem is to learn how to utilize his present skills while at the same time acquiring new ones.

How does he do it?

FIRST, and most important, he must grasp the idea that management is a field of knowledge just as engineering is; and that he must acquire an understanding of the tools, language, and techniques being used in the management field if he is ever to succeed as a manager. Secondly, and this is the most time consuming, he must set about getting the information he needs.

Since we are concerned with today's engineer, it matters little whether the schools and colleges will someday be able to give the engineer training in industrial management or not. At the present time our engineering schools are hard pressed to get all the *engineering* courses they want into four or even five-year curriculum.

Some companies have developed management training courses especially designed for engineers. For the most part, however, candidates for these schools are rather carefully hand-picked from among the most promising engineers in the plant—most promising from a management viewpoint, that is. Our concern here is with the average engineer who wants to prepare himself for a future management job. What can he do to help himself?

Assuming that the engineer has consciously accepted the idea that he does have a lot to learn (and you would be surprised how difficult this is for some engineers) there are a number of things he can do—none of which are particularly romantic or exciting. We are talking, you see, about a solution which involves a considerable amount of work and determination, not a royal road to the president's chair!

One of the first matters he should consider is the language of business. No engineer worth his salt lacks an understanding of mathematical expression. Complex and difficult processes can be greatly reduced and simplified when one expresses them as mathematical formulae. So it is with business. Accounting terms and phrases are the language of industry, yet few engineers can understand a balance sheet or a profit and loss statement. You need not be an accountant to be a manager, of course, but you certainly need to be able to understand what the accountant is trying to tell you.

Another consideration is the expression of ideas. The engineer who would become a manager would do well to join a Toastmasters group, or some similar organization, where he can learn to express his ideas vocally and on his feet. There are few more pitiful sights on this earth than a good "board" man trying to express himself without the aid of pencil and paper. Nor should the written word be ignored. And in this connection our aspiring engineer would do well to practice writing in lay language. A board of directors will not take time to wade through a highly technical engineering report. They will get a man who can talk their language.

Many problems in the realm of management can never be reduced to simple facts and figures such as those stored in this new electronic data processing machine, or so-called "giant brain," because the human element is too variable.

FINALLY, our man should make it a practice to do considerable reading in business journals. I know of no better way for him to become familiar with the problems of business executives, the way businessmen think, and the new developments that are receiving the attention of business leaders. I am not trying to plug any particular publication, but careful and selective reading in a few magazines every month will repay the subscription cost one hundred fold in a five year period. Four well known publications representative of the type I am talking about are: *Harvard Business Review, Fortune, Dun's Review* and *Modern Industry.*

This, it seems to me, is a realistic approach to the problem. The engineer is in demand for top management jobs. Not only that, but he has some attributes which tend to qualify him above all others to meet the demands of modern day management positions. On the other hand, he must recognize the "vital shift" which he has to make in his thinking and in his approach to problems. Then he needs to do something about it.

I realize that the things I have said in this article are simple, perhaps even obvious. Yet, as I glance back through these words I have written, I cannot help thinking how many sleepless nights, how much frustration, and how much misunderstanding I could have avoided had I but recognized these simple truths fifteen years ago!—***End.***

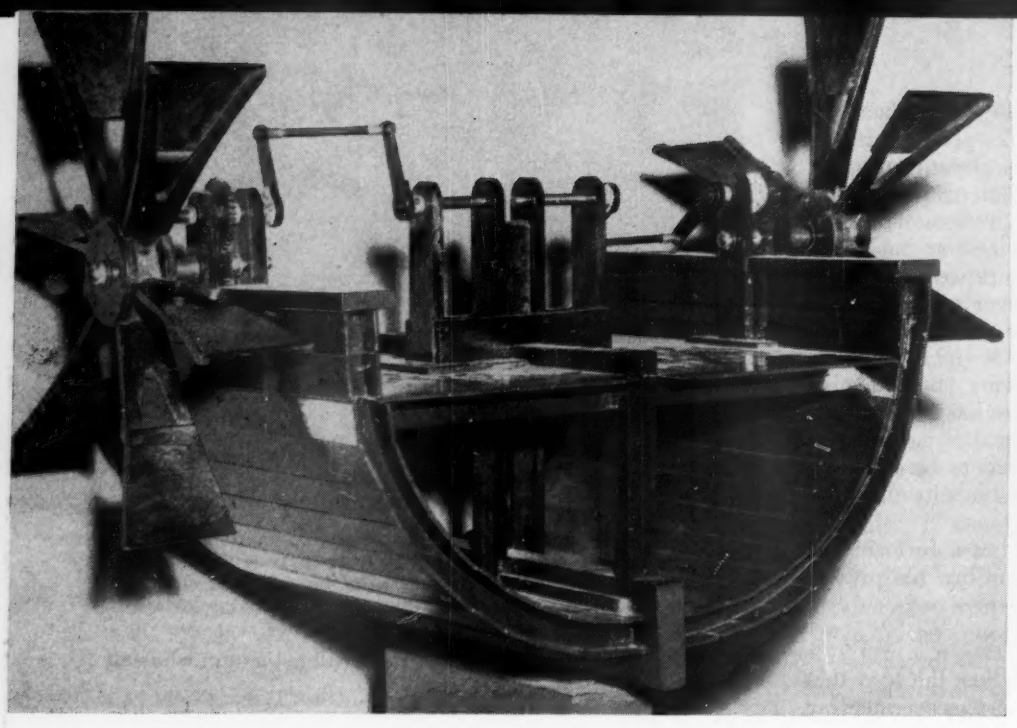
About the Author . . .

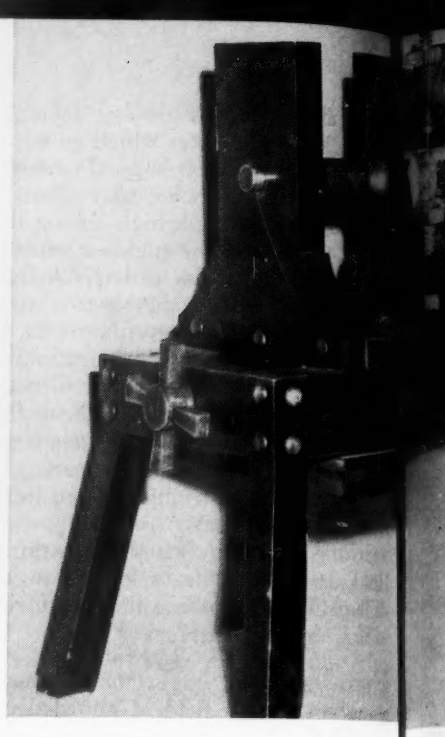
Mr. Chiles

H. E. Chiles, Jr., is president of The Western Company, an oil well servicing firm of Midland, Texas, which he organized in 1939. He holds a B.S. in petroleum engineering from the University of Oklahoma, where he was a member of Sigma Tau, honorary engineering fraternity, and he is a registered professional engineer in the State of Texas.

Prior to establishing his own company, Mr. Chiles worked as an engineer in various capacities with the Reed Roller Bit Company, first in Houston, Texas, and later in Ada, Okla., and northern Louisiana.

He has recently taken office as the president of the Young Presidents' Association and has been elected a director of the American Management Association. In 1953 he was named "Engineer of the Year" for the Permian Basin Chapter of the Texas SPE. In addition to these organizations and NSPE, he is also active in the Independent Petroleum Association of America, the American Petroleum Institute, the AIMME, the Texas Research League, and other professional and civic groups.



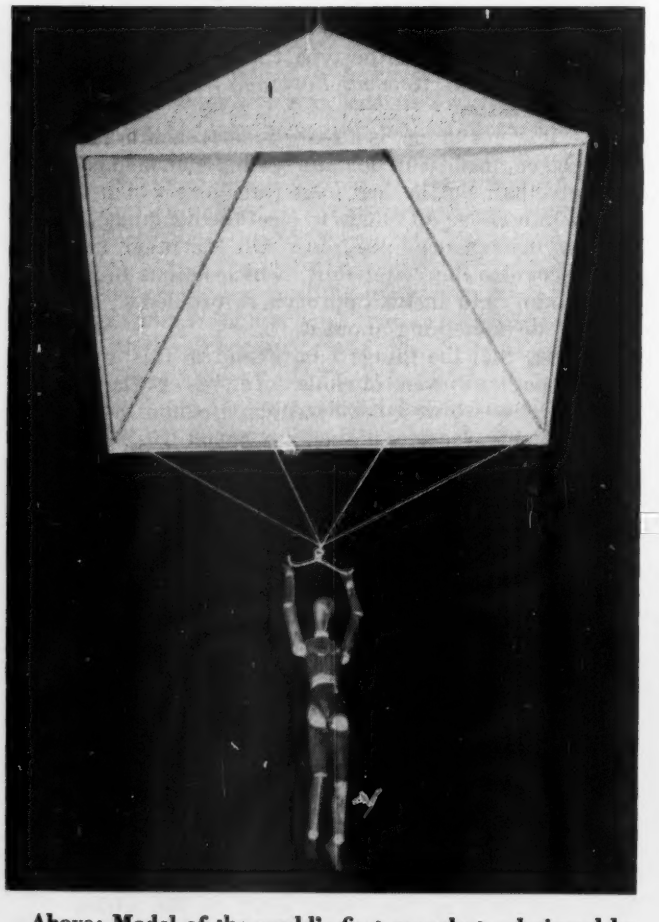


By

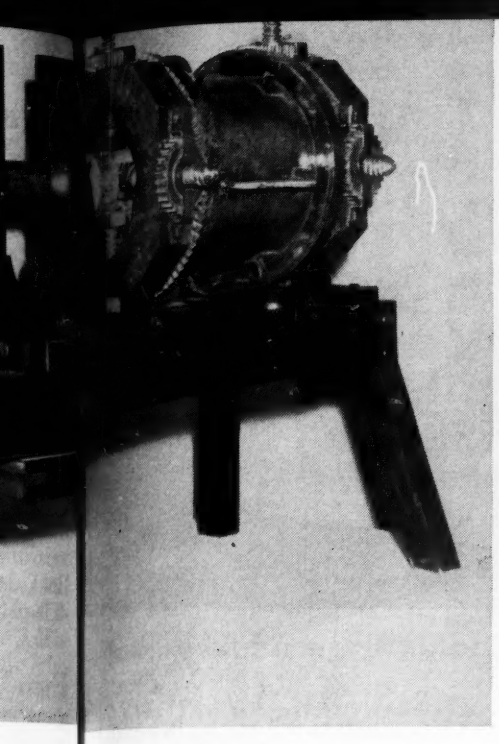
DAVID A. HELLER

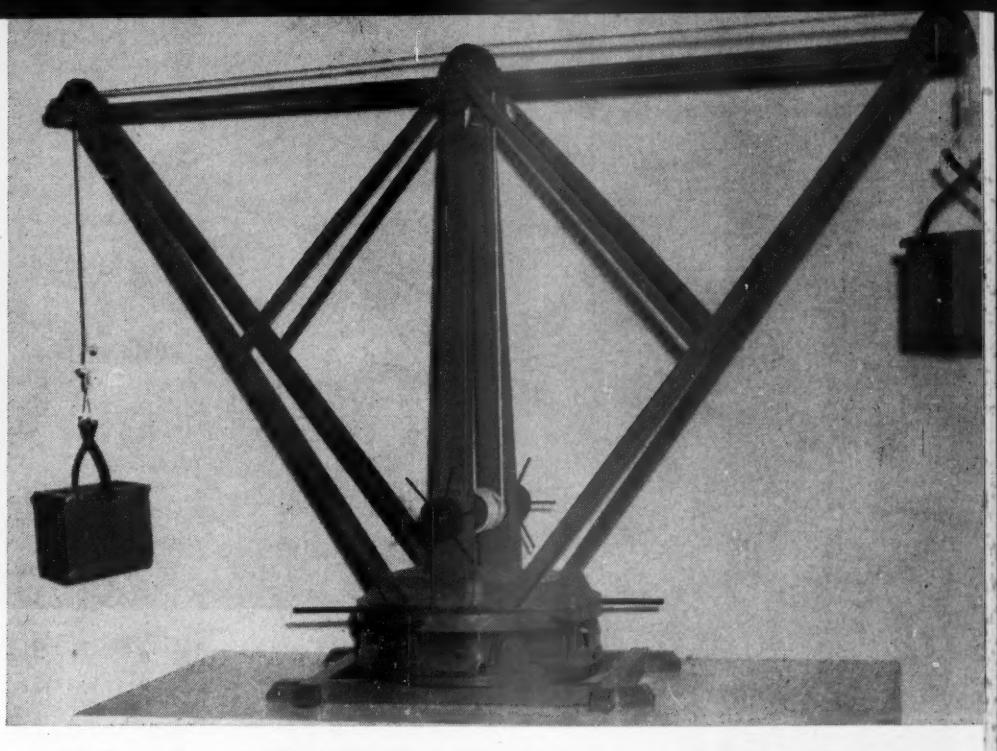
The Engineering Genius of Leonardo Da Vinci

Hundreds of Years Ago, When the Mind of Man Was Still in the Dark Ages, Leonardo Da Vinci Anticipated Many of Our Most Notable Engineering Achievements. An Exhibit of Working Models of Drawings from his Famous Notebook Is Being Held At Washington's Smithsonian Institution.



Above: Model of the world's first parachute, designed by Leonardo Da Vinci more than five centuries ago. Dutch engineers made tests with Leonardo's "tent of linen." It worked fairly well. It is believed to have been tried out in Leonardo's own day—successfully—from a tower built especially for that purpose. At right: Military tank designed by Leonardo 450 years ago. Its mobility was based on four independent wheels driven by man power. It was shaped to withstand the impact of cannon balls.





Above, far left: Cutaway model of Leonardo's design for a paddle-driven boat. It used human motive power, but was a great advance over anything designed up to that time. Note the reinforced hull. Center: Leonardo's lathe for drilling wooden water pipes from logs. This machine features an automatic chuck. At right: Doublearm crane designed by Leonardo Da Vinci.

— *An American Engineer Photo Story* —

EXACTLY 502 years ago, there was born in Vinci, Italy, a man who may well have been the greatest universal genius of all times. His name was Leonardo, and he was called Leonardo Da Vinci. ("Leonardo of Vinci").

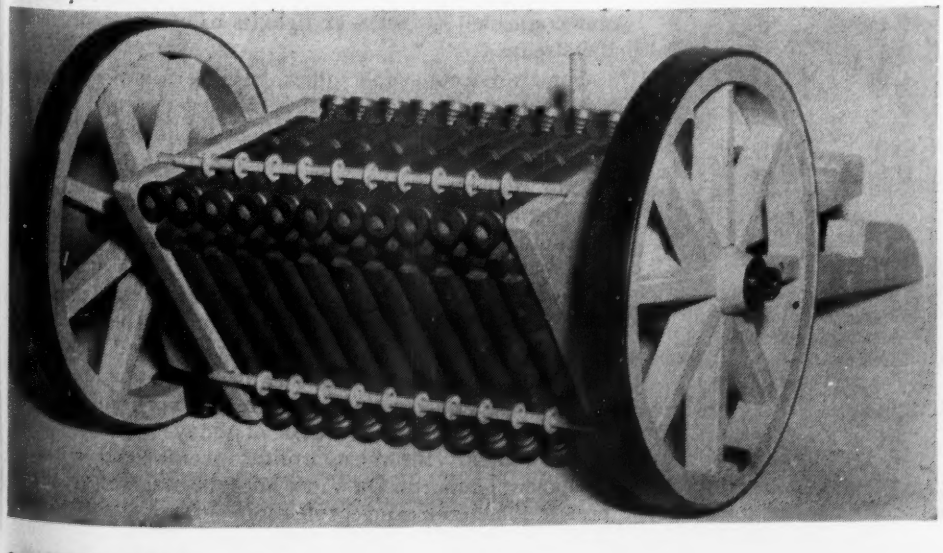
Although the public remembers him primarily as a painter, students of engineering will remember that his incredible drawings in his famous notebooks anticipated by hundreds of years most of the engineering achievements which have made our 20th century way of life possible.

The International Business Machines Corporation has performed a substantial public service by having one of the foremost authorities on Leonardo's life, Dr. Roberto Guatelli, construct working scale models of the famous drawings in the Italian genius' notebooks. The construction took years of work and research.

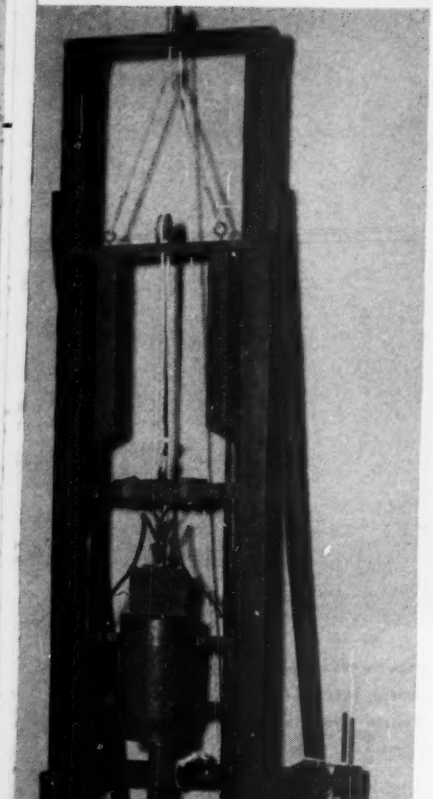
Leonardo anticipated many of the things which have only come to pass in comparatively recent years: the airplane, the helicopter, machine guns, air conditioners, revolving bridges, roads on several levels, the piledriver, a jack, a steam gun, a variable speed drive, self-propelled ships, a cone-headed mitre valve—and hundreds of other inventions. Many of these were literally centuries ahead of their time.

The IBM Company has placed its models on exhibit in various places in America, including the famous Smithsonian Institution in Washington, where these pictures were taken.

Some of the machines represented by models were actually used with success in Leonardo's time. A steam gun, which was fired by steam pressure, (the barrel allowed



Another of Leonardo's machine guns. This consists of three tiers of twelve barrels each. One tier was to be fired while a second was being loaded and the third was cooling.



At the left is a pile-driver in the operation of which human power was used to lift the hammer to the height from which it was released. Above, right, is Leonardo's flying machine.

Below is a model for an aerial screw hailed as the precursor of the helicopter.

water to flow into it as it was heated red hot by live coals) shot a projectile nearly two miles. An excavating machine, consisting of a large crane with a series of pivoting arms which supported loading cages, was highly successful.

Leonardo's improved printing press in which a movable bed of type was carried under the platen for the first time, and an air-conditioning unit that was built for the boudoir of Beatrice d'Este, wife of Leonardo's patron, both saw everyday use.

Leonardo's most spectacular invention of all, the ornithopter, or flying machine may actually have been built and tried out. It consisted of a wooden frame, two huge wings, a series of ropes and pulleys and a windlass. Lying prone in the frame, his feet in leather stirrups connected by pulleys with the wings, the flyer moved his feet up and down to flap the wings. At the same time, he operated the windlass with his arms and guided the machine. Not a very good source of power! However, the machine contained many of the principles of the airplane and may have worked as a glider.

MANY of Leonardo's inventions were definitely among the forerunners of the engineering profession. For example, he designed and built a hydraulic pump which was over 70 feet high. Erected beside a stream, it used the power furnished by the flow of water to pump water to the Castle of Milan.

He also designed a grinding mill intended to work on one side of a swiftly-flowing stream. The milling machinery was connected by gears and shafts to turbines situated in the stream.

Some of Leonardo's other engineering developments were a hydraulic screw which converted water power to mechanical power by transmitting to a horizontal axle the rotary motion imparted by water moving the blades; a mirror polishing machine; an automatic turnspit which was turned by the upward flow of warm air through a windmill in the chimney; and a hydraulic-powered saw.

Leonardo devoted much of his time to the arts of war. He was an excellent military engineer. Some of his inventions include a breech-loading cannon, several military bridges, one of which could be constructed behind the battle line on wheels, ingenious machine guns, excavating machines, scaling ladders—which look very much like the ladders on fire-fighting trucks of today.

Undoubtedly the most prolific inventor the world has ever seen, Leonardo Da Vinci left a heritage of great richness to the engineering profession.—***End.***

TRAINING REPORT MARKS MILESTONE

Conference Board to Study Methods of Training Engineers in Large and Small Industrial Firms. Published Report Due Late This Fall.

By

JOHN D. COLEMAN, P.E.

Chairman, Professional Engineers Conference Board for Industry

Mr. Coleman

THREE years ago the membership of the National Society of Professional Engineers decided to inaugurate a comprehensive research program, on a nation-wide basis, that would make a definite contribution to the solution of current engineering-management problems.

This is the story of what happened in those brief years as practical men turned a "decision" into the concrete reality of a definite research accomplishment,—an accomplishment that has served industry, the membership of NSPE, the engineering profession as a whole, and has established the research facilities to continue this service.

This month is a particularly fitting time for such an appraisal as it is the occasion for the announcement of the fourth executive research survey report in the current series sponsored by the Professional Engineers Conference Board for Industry.

This report, "How to Train Engineers in Industry," is now in preparation, with publication scheduled for late this year.

The story of the research program, which resulted in the formation of the Conference Board, really goes back to the summer of 1950 when the NSPE board of directors formally voted, at their annual meeting in Boston, to authorize the solicitation of funds from the membership for the program.

The first mailing piece, outlining the project and asking for support, went out to the members in November of that same year. It resulted in contributions totaling approximately $15,000. A second mailing in January of 1951 brought the fund up to around $28,000. The program was started with this amount but the contributions eventually rose to nearly $50,000.

What the Society got and is still getting for its money can probably best be seen in the clippings of the published news stories and special articles that appeared in the nation's newspaper, business, industry and trade press in response to the program. These stories and articles were written because editors recognized the informational value of the material that was being developed about professional engineers and their role in industry.

The Professional Engineers Conference Board for Industry was first set up as an NSPE advisory group. Members were elected by the board of directors of the National Society and, according to the bylaws of the Conference Board, had to be registered professional engineers "of high standing in the engineering profession."

In March, 1952, the first executive research survey report was published. This report, "How to Improve Engineering-Management Communications," was widely dis-

The Conference Board, in cooperation with the NSPE, has spent more than $50,000 to study the problems of the engineer working in industry. Their findings are contained in three reports, with a fourth soon to go on the presses.

tributed throughout industry and the profession. Its findings were the subject of much published comment in the general, trade, and business press.

The choice of this survey topic was an especially fortunate one for the first of the series sponsored by the Conference Board. The great post-war expansion of American industry generated a consequent increase in the size, complexity and dispersion of industrial engineering staffs. The lines of communications between engineers and management had been generally loosened as industry grew and expanded.

To get factual answers on how to improve engineering-management communications more than 350 firms, employing over 2,000,000 persons, were surveyed. The questionnaires, designed to bring out information about the size and type of industrial operation, indicated that there was only relatively minor participation by engineering staffs in management planning. Ways in which engineering opinion got to management's attention were indicated and many suggestions were made in the report for the betterment of these. The survey also went into considerable detail on the question of developing management potential in trained engineers.

No one close to the problems of engineers in industry could read this report without realizing that here was a comprehensive and high level effort to get information from industrial and professional sources, and an equally comprehensive and high level effort to get this information back to the people and places where it could do the most good.

The Conference Board's second report, "How to Improve the Utilization of Engineering Manpower," was published in November, 1952. Again, the survey method was used and the report showed how approximately 500 companies, employing some 160,000 engineers, were getting the most "mileage" from these people in the face of a continuing high demand for engineers.

The report indicated that 42 per cent of the firms surveyed found engineering turnover a problem in maintaining an efficient engineering staff. Significantly, the questions brought out the fact that incentives offered by management were more important than benefits in holding engineering talent. A feature of the report was an "engineer utilization checklist." This was, in effect, a set of questions which could be used by a firm to survey its own engineering staff.

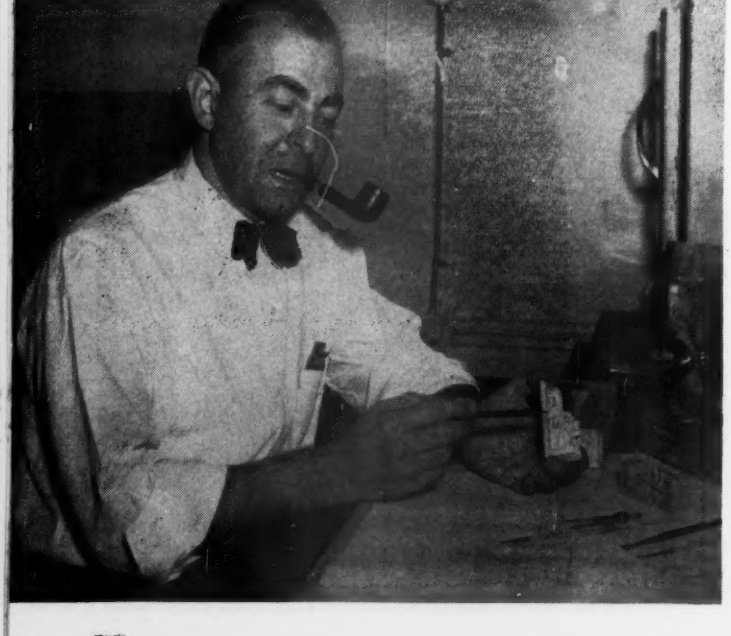
An important conclusion of this second report was that much of the "shortage" of engineers was due to the use of engineers for routine work of a type that could be done by other trained workers. Replies to the questionnaires indicated that management is, on the whole, aware of this condition and 70 per cent of the firms queried stated that they used supporting personnel to relieve the staffs of routine engineering detail. However, about 70 per cent of the firms said they used graduate engineers for non-technical work.

January of 1954 saw the publication of the Conference Board's third report, "How to Attract and Hold Engineering Talent." The nearly 10,000 copies of this report found their way to a considerable segment of American industrial management. Typical of the publicity given to the report was an article in the magazine "Business Week." This article was devoted to a review of the conclusions of the report and their implications for industry. Newspapers in large cities all over the country carried summaries of the report, as did many technical and trade publications.

The conclusions reached in this survey report spared neither the professional engineer nor management. Response to the questionnaires brought out the fact that nearly 40 per cent of engineers employed in industry are unhappy in their jobs. In listing and evaluating the causes for this discontent, the report provided management with what amounted to a blueprint for developing sound engineering-management relations. Engineering educators likewise found a stiff criticism of college courses which turned up in the questions answered by both employers and engineers.

Looking back, the Conference Board's three published executive research survey reports make up a valuable and definite contribution to the literature in the field of industrial management. The fourth report on engineer training in industry should prove an equivalent contribution to management and the profession. The whole subject of "post graduate" training for engineers in industry is an increasingly vital one. Many large corporations have developed this training to the point where it consumes an annual expenditure of several million dollars. Much of the research activity of these firms is closely tied in with their training programs for engineers.

The importance of making certain that the talents of engineers, such as the one pictured below, are not wasted on sub-engineering activities was stressed in the Utilization report.



The publication of this fourth report will terminate the the current series of executive research surveys. The whole program will then be re-evaluated by the Conference Board and the next approach defined.

The Conference Board, incorporated in the fall of 1953, is now completely separate, legally, from the National Society. A ruling early in 1954 from the internal revenue office declared the Board to have a tax-deductible status. This gives the Conference Board a standing similar to that of the tax exempt foundations that are organized and operated exclusively for educational and scientific purposes.

A section from the Conference Board's certificate of incorporation as to its purposes may help illustrate the quality and extent of its over-all program. The section declares these purposes to be:

(a) to improve and further develop the capabilities of individual professional engineers and engineers-in-training, for service to industry by aiding their continuing education;

(b) to advance and further develop the preparation of engineering students for service to industry by co-

operation with engineering schools to improve courses of instruction;

(c) to cooperate with industry for the purpose of fostering and improving the effective utilization of professional engineers and engineers-in-training, to study and report techniques, procedures, and conditions which are conducive to the greatest engineering productivity;

(d) to carry on and promote scientific research and studies which will disclose new and effective ways and means for improving the usefulness of professional engineers to industry in bringing about greater efficiency and productivity;

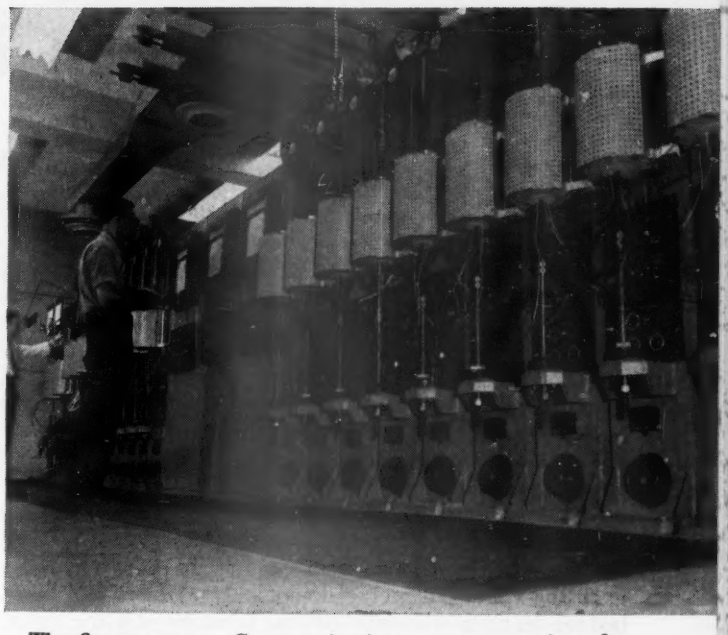
(e) to aid and assist schools of engineering in developing better methods of education and in improving the training of professional engineers by means of providing such institutions with information developed from such scientific research studies, and with publications, reports, addresses and other valuable material and services;

(f) to couduct educational forums and clinics with industrial executives, engineering administrators and educators, on methods and procedures for increasing effectiveness of engineers in advancing industrial efficiency and productivity;

(g) to prepare, publish and distribute books, reports, studies and other literary works which serve the aforesaid purposes;

(h) to acquire, preserve, and make available for use to interested individuals, institutions, governmental agencies, and industrial concerns books, reports, studies memoranda, manuscripts, theses, research papers, and any other material bearing on the aforesaid purposes.

There is today, and will continue to be, a great need for a broad-gauge, industry-wide research program such as outlined above in the purposes of the Conference Board.



The first report on Communications gave suggestions for improving the two-way flow of information between management and engineers such as those, above, conducting research in U. S. Steel's National Tube Company laboratory in Pittsburgh.

If professional engineers are to assume a responsibility commensurate with their importance in industry they must be prepared to "lend a hand" in the solution of certain industrial problems.

The members of the Professional Engineers Conference Board for Industry feel that the research projects sponsored to date have given the whole research program a solid foundation and one that can be built on with even more success in the future.—***End.***

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Engineering in Human See-Ability

Dr. S. G. Hibben

Director, Applied Lighting, Westinghouse Electric Corporation

WHEN, 75 years ago, Thomas Edison experimentally produced a workable incandescent lamp from a carbonized piece of cotton thread and thereby stimulated a lighting business that began our electrical era, illuminating engineering was a very simple matter. There were two lamp bulbs with which to deal, namely, 16 and 8 candlepower, both designed for the same socket and to burn on the nominal 55 or 110 volt direct current system. Only a few dozen each day were made.

Today as we celebrate Light's Diamond Jubilee we may be astounded to note that every year in this country we use considerably more than two billion lamp bulbs or light sources, and that the variety as to shape, color, rating, etc. runs on the order of more than seven thousand. Some burn the short but merry life of only .001 second. Some last for decades. All made with the accuracy of a fine watch, some sell for as little as three cents,—others for more than $300. Consequently the job of the lighting engineer is no longer a simple matter,—in fact, it calls for the very highest talent among the topmost professions.

In appraising the growth and complexities of the lighting business, one might note that the increase in lamp production has in the last two or three decades been a very steep curve, accelerating more rapidly than the growth of population. Today in the United States we use between 10 and 13 lamps per capita, compared to four in the Scandinavian countries, three and one-half in Great Britain, and two in France.

Figure 1 illustrates the effect on the lamp business of not only higher standards of living and more nighttime requirements for both work and play, but also the effect since about 1920 of the growth of engineering and technical education, leading to better lighting practices and a larger variety of applications.

Part of this growth is unquestionably traceable to the better bargains in lighting that have resulted from better techniques of lamp manufacture, especially lower prices, longer lives, and higher efficiencies. This is apparent when we note that the lumen-hours or the amount of light generated and used today is easily twice that of ten years ago. This means that not only are the lamps themselves considerably more efficient, but it means that the varieties of usage or the advantages of illumination have caused the average lamp to be burned longer. This means, further, that as the advantages of good light for good seeing are better known, than the average bulb size has grown from about 50 to 83 watts in recent years.

Nowhere in the list of commodities or services available to mankind has there been such a remarkable bargain,—an improvement of easily one-hundredfold since Edison's early experiments in producing a lamp that cost about one dollar to make and which burned about 50 hours, consuming approximately 90 watts and emitted roughly 165 lumens. This was at an efficiency of 1.8 lumens per watt. A typical modern fluorescent lamp today costing about the same per unit consumes 40 watts, but lasts approximately 8,000 hours and delivers an average of 2,500 lumens!

THE curves of Figure 2 illustrate how the total generation of electric power in this country has rapidly increased in recent years. Roughly one-third of the total electric power is now used for lighting, and this year the lighting energy will probably exceed 115 billion kwh. No reasons exist to indicate that the combination of lighting education, the increasing bargains in light, and the increasing uses of new illuminants would do other than suggest,—almost guarantee—the continued growth of power for lighting and allied purposes. It is estimated that some 88 million kilowatts of installed generating capacity are available this year, but that for a considerable number of months to come we shall have to add a capacity of about one million kw. each month.

The demands upon the experience and clear thinking of the modern lighting expert are complicated by the new services that lamps are called upon to perform. For example, in Edison's day we had direct current, and voltage was taken as it was found. Today we have 60-cycle alternating current, some 400-cycle, some direct, and a great host of voltages, between about 1.2 and 3,000. Every classification of lamp bulb performs differently, or has to be designed and applied expertly in order to give equally good service under a variety of operating conditions. Tungsten filaments have to be critically alloyed with other materials in guaranteeing good life on higher voltages or on alternating current or to withstand shock and vibration. No lamp that Edison ever thought about could serve well on your modern automobile or airplane, or Christmas tree. To the host of engineers who have marched across the stage of the drama of lighting goes the credit for such achievements as lamps which kill germs, detect forgeries, or photograph a bullet in flight.

Edison's ambition was to help people to see or to work after natural lighting failed. Today we find lamp engineering doing much more than promoting see-ability, as im-

Fig. 1—Growth of Light Sources

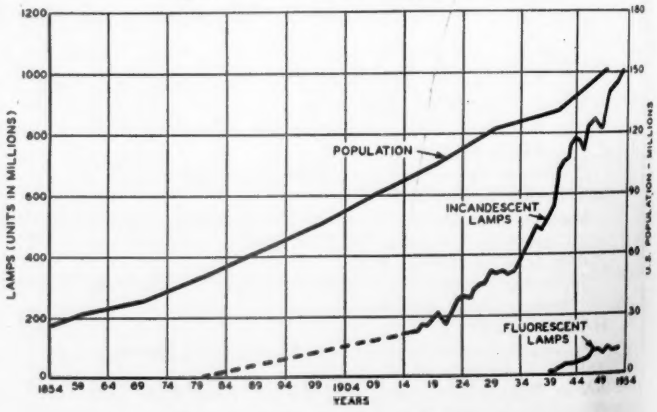
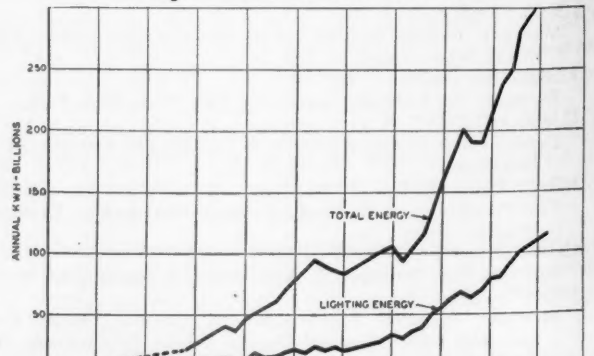


Fig. 2—The Growth of Power

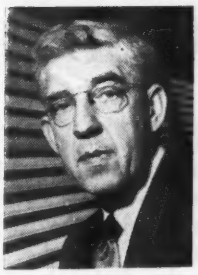


portant as that continues to be. Among the jobs are to grow plants, prevent mold and food spoilage, purify or sterilize air and various utensils against the spread of disease; bleach fabrics, promote chemical reactions as in the production of uranium or blueprints or fertilizer, and provide the basic standard of linear measurement. Usage in the form of black light constitutes one of the world's best media of crime detection. Light serves to transmit secret messages invisibly, or to probe the otherwise unknowable astronomical universe. Radiant energy in the form of infra-red is a blessing for alleviating disease or pain, drying paints and adhesives, brooding chicks, and expediting many manufacturing processes.

LITTLE did we think 75 years ago that lamps would serve mankind in so many fields in addition to see-ability,—in fact, it is predicted that the lighting engineer of tomorrow will need his scientific knowledge more in the application of lamps for nonvisual purposes than he will for tasks involving vision.

As an example of some of the newer lamp sources with which we must deal expertly, note Figure 3 which illustrates the line of high-intensity mercury vapor lamps; Figure 4 which shows some types of photo-chemical lamps; Figure 5 which illustrates a Krypton lamp of tremendous brilliancy for airway markers, etc.; and Figure 6 illustrating the newest development in short-arc quartz bulb mercury vapor lamps as substitutes for carbon-arc lamps. These and many more examples present a challenge to the illuminating engineer, who discovers that lighting is no longer a simple matter of connecting a 16 candlepower carbon filament bulb to a pair of copper wires.—***End.***

About the Author . . .



Dr. Hibben

Samuel G. Hibben is one of the Nation's best-known specialists in the field of illumination engineering. A graduate of the Case Institute of Technology, Cleveland, with both B.S. and E.E. degrees, he has also done extensive post graduate work at Carnegie Tech and the University of Paris.

He is currently director of applied lighting in the Lamp Division of the Westinghouse Electric Company, Bloomfield, N. J. He is an authority on the floodlighting of public sites and monuments, and his designs now light the Statue of Liberty, the Washington Monument, the Carlsbad Caverns, and the Crystal Caves of Bermuda, and many other well-known places. He was also responsible for a substantial part of the lighting at Chicago's Century of Progress and the New York World's Fair.

Dr. Hibben is a past president of the Illuminating Engineering Society and a member of the AIEE and many other distinguished engineering groups.

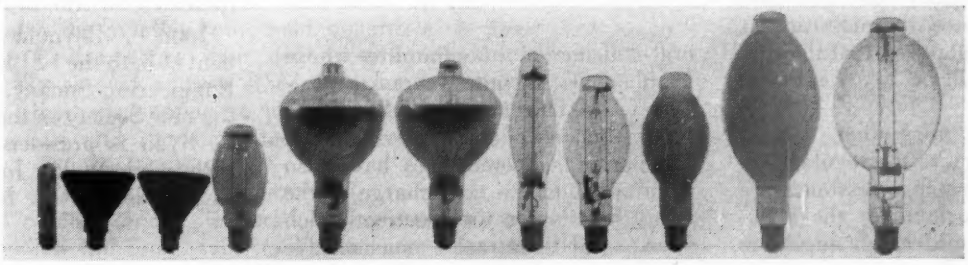


Fig. 3—High intensity mercury-vapor lamps of recent design.

Fig. 4—Various tubular mercury lamps in high-transmission glass are used in blueprinting, dyeing, fertilizer production, and many modern industrial processes.

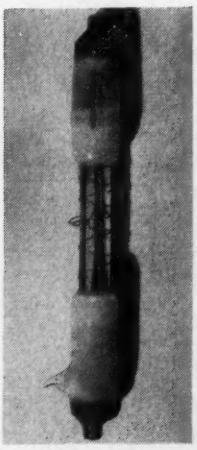


Fig. 5 (above left)—One of the brightest of all lamps, a Krypton tube for airway markers, flash photography, and projector service.

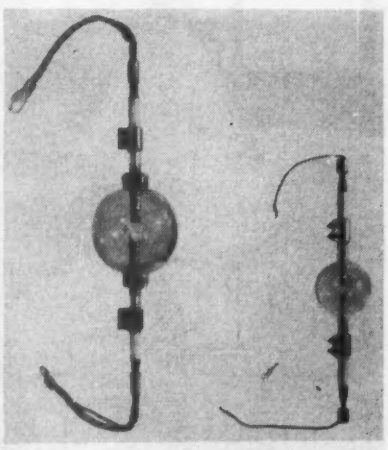


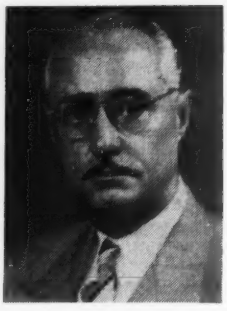
Fig. 6 (above right)—Part of the growing family of quartz high-pressure short arc lamps for searchlights and narrow-beam projectors.

Under Sec'y of Commerce Williams Will Be Principal Omaha Speaker

Under Secretary of Commerce Walter Williams will be the featured speaker at the Friday evening banquet during the NSPE Fall Meeting scheduled for the Hotel Fontenelle, Omaha, Nebraska, October 15-16. It is expected that Mr. Williams, who is a chemical engineering graduate of the University of Washington in Seattle and a member of Tau Beta Pi in addition to having had a very successful career in the financial world, will discuss some phase of the engineering profession's place in the national economic picture.

Walter Williams ►

The guest speaker for the Saturday, October 16, luncheon has also been announced. He is Henry C. Woods, chairman of the board of the Sahara Coal Company, Chicago, Illinois, and a well-known figure in industrial circles throughout the country. Mr. Woods, who is a graduate of both Yale University and the Graduate School of Business Administration at Harvard, has announced that the title of his address will be *You Engineers Are Needed.*



◄ Henry C. Woods

Arrangements for other special events, in addition to the regular professional and business sessions, are also going forward under the direction of a committee of engineers from the Nebraska Society, whose members are acting as hosts for the event. L. E. Miller is acting as general chairman of this committee whose members also include Nebraska President C. W. Durham, B. H. Backlund, S. A. Michael, and J. D. Griffiths. A number of subcommittees have also been appointed to take charge of the many details for the meeting which is expected to attract a considerable number of NSPE members from nearby states in addition to the regular delegates.

Pictured above are S. A. Michael (left) and L. E. Miller as they work on plans for the Omaha meeting. Mr. Michael is handling publicity for the meeting, while Mr. Miller is serving as general chairman.

Shoch Hails State Society Mergers

NSPE President Clarence T. Shoch has extended his congratulations to the professional engineers of Florida on the recently-accomplished merger of the Florida SPE and the Florida Engineering Society and to the engineers of Kansas on the just-voted merger of the Kansas SPE and the Kansas Engineering Society.

Hailing the two mergers as excellent examples of the growth of professional unity, Mr. Shoch stated that the action in each of the two States will undoubtedly strengthen the impact of professional activity and enhance the value of the Societies to their membership. "I am sure," he said, "that these mergers of such fine professional groups will be of the utmost value in advancing the cause of professional engineering in both Florida and in Kansas. The members of both newly-merged Societies deserve our sincere congratulations for accomplishing a worthy achievement indicative of true professional unity."

John F. Reynolds, who was president of both the FSPE and the Florida Engineering Society, currently heads the new Society in that State. William F. Ryan is president of the Kansas SPE, while Walter Johnson is serving as president of the KES.

Warren A. Coolidge Becomes APWA Prexy

Warren A. Coolidge, who was the first national director to NSPE from the Tennessee Society of Professional Engineers, has recently taken over the gavel as president of the American Public Works Association. Mr. Coolidge had a record of twenty-two years as a professor of civil engineering at Vanderbilt University in Nashville before he took a leave of absence to help with that city's public works problems. The "leave of absence" became permanent in 1947 when he resigned his professorship as his position as director of the city's public works was put under civil service.

In addition to his membership in APWA, NSPE, and the Tennessee Society, Mr. Coolidge, who is a graduate of the University of Kansas, also belongs to the ASCE and is a former president of the Municipal Division of the American Road Builders' Association.

FROM WASHINGTON

By
Milton F. Lunch,
N.S.P.E.'s Legislative Analyst

POLITICS AND SOCIAL SECURITY

Each even year (election year) the members of Congress are afflicted with a disease known as "Potomac Fever." The ailment assumes epidemic proportions about a week before the scheduled adjournment of Congress and produces some weird results. This year the "fever" particularly had an effect on self-employed professional engineers. On the last day of the malaise (it always is completely cured when the solons return to their constituents back home) the social security revision law was passed and the self-employed professional engineers of the nation found themselves "in."

The start of the story goes back to January of this year when President Eisenhower sent a special message to Congress asking for a number of changes in the social security law, specifically including a strong plea for the mandatory coverage of self-employed professionals. This was in line with his previous request of a similar nature in August, 1953.

The Senate and House committees held extensive hearings at which witnesses for various professional societies opposed mandatory coverage of the self-employed professionals on the major ground that such persons do not retire normally at the age of 65 and would not receive the monthly retirement benefits after paying into the fund because their continued earnings would exceed the amount allowed (then $900 per year). NSPE and all other engineering societies which testified took this position and recommended a voluntary coverage system.

All of the various "expert" advisory bodies which have studied the social security extension problem have stated that a voluntary system is unsound because those who would derive the greatest benefits would elect coverage at the least cost and those who would support the fund over a period of years would not elect coverage. They refer to this theory as "adverse selection." The House committee and then the full House accepted this reasoning and rejected voluntary coverage. The House-passed bill provided mandatory coverage for all self-employed professionals, except doctors.

Senate Group Changed Mind

The issue was joined again before the Senate committee and that body was sympathetic to the idea of treating all the professional groups alike and first voted to provide voluntary coverage for the self-employed professionals. Presumably, the Administration applied pressure to change this decision. In any event, the decision was changed within a matter of days and the Senate committee then voted to continue the exclusion of all self-employed professionals. The committee report specifically rejected the voluntary coverage approach, accepting the "adverse selection" theory. The Senate accepted the committee's report and thus the self-employed professionals' fate was left to the conferees of the two bodies.

This process had brought the issue to the last few days of the session. What was to be a quick and easy conference turned into a stalemate on the question of the treatment of the self-employed professionals and the self-employed farmers who were to be covered by the House bill and excluded by the Senate bill. The conference deadlock extended to the very last day of the session and finally was broken with a so-called "compromise." The agreement was to include self-employed architects, engineers and accountants and continue the exclusion of lawyers, doctors and dentists. The conference report offered no reasoning for the division and none was given on the floor of the House. Senator Eugene D. Millikin of Colorado, chairman of the Senate conferees, told his colleagues that the reason for the decision was that the House representatives stated to the conferees ". . . that many accountants, architects, and engineers had requested coverage."

This simple "explanation" of the division between the professions is too simple. It cannot be doubted

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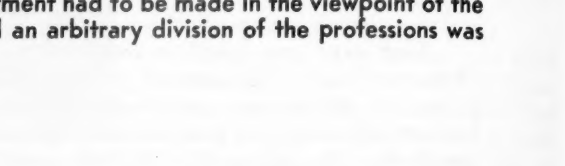
that some or "many" in the professions included did write to their Congressional representatives in favor of coverage. But it is also without doubt that as many or more doctors, lawyers and dentists made the same request. There were strong elements within those professions favoring coverage. According to the president of the American Bar Association, opinion was so divided within that organization that it did not testify either way. In the case of the medical profession testimony was offered by organized groups on both sides of the question and statements on the floor of the House indicated that many dentists had requested coverage. Contrasted with this, not a single engineering organization testified for coverage, but all strongly opposed mandatory inclusion.

The true explanation of the "compromise" was given by Senator Millikin when he told his colleagues: "We reached a stalemate, and it looked as if the whole thing would fail . . . Some of us said, 'The bill must not be allowed to die in conference.' So some adjustment had to be made in the viewpoint of the conferees." In other words, compromise was required and an arbitrary division of the professions was the answer, supported neither by logic or facts.

All Earnings Count

Another major decision in the new bill, over the opposition of NSPE and the other engineering societies, was to make all earned income count toward computation of the allowable earnings without loss of benefits instead of just that from earnings covered by social security. This change is not significant now in view of the coverage of self-employed professional engineers, but it means that all income aside from investment income will be counted in determining whether monthly benefits are payable.



The amount of allowable earnings was raised from $900 to $1200 per year and the age at which the limitation does not apply was lowered from 75 to 72. Benefits were increased to a minimum of $30 per month, a maximum of $98.50 and a maximum monthly family benefit of $200 per month. The income base on which contributions are made was increased from $3600 to $4200 per year and provision is made for dropping out the five lowest years of earnings in computing the average monthly income which determines the benefits. The self-employed will pay 3% of their earnings up to $4200 per year and this rate will gradually rise to 6% by 1975.

Future Developments

Senator Walter F. George of Georgia, who led the fight for voluntary coverage of the self-employed professionals and then strongly opposed mandatory inclusion of some of the professionals and the farmers. has predicted that it is now only a question of time until the other professions—doctors, lawyers and dentists—are forced into the system. Leaders of the farm groups, however, have indicated that they will make a strong fight next year to change the coverage decision as it affects their group. It has been noted that coverage does not start until January 1, 1955, and the first tax return is not due until 1956 with the 1955 income tax form. Thus, there is the possibility that the newly-covered professional groups may be able to join in this move and seek a reversal of the decision before it becomes practically effective.

NSPE, like all other professional societies, has a difference of opinion among the self-employed members who would be affected. A poll of the self-employed members disclosed approximately 55% opposed to mandatory coverage and approximately 45% who favored it. Whether the changes in the law, mentioned above, would influence the pro and con views remains to be seen.

It seems clear that there is little, if any, chance of obtaining voluntary coverage in view of its rejection by both bodies of Congress and the strong opposition of the Administration. The other possible courses of action, short of exclusion, are to seek a continual lowering of the age at which the earning limitation does not apply (complete elimination of the limitation would require additional financing payments estimated at 1%), and a further increase in the amount of the allowable earnings.

The NSPE Board of Directors will consider future Society policy on this question at the Fall Meeting in Omaha, October 15 and 16.

Registration Law News Reported

... California Pushes Enforcement Program ... Wisconsin Spells Out Listing Policy ... Minnesota Supreme Court Upholds City Registration Requirement ... Ohio "Designer" Indicted

THE California registration board reports increased activity in connection with enforcement of the registration law and suggestions for additional registration legislation.

In the first category, 71 investigations were made during April, May and June; 34 warnings were issued and 11 persons were cited before district attorneys. Among the final actions were the court holdings of "guilty" in three cases of individuals who had practiced or illegally used an engineering title without being registered. Fines were imposed in two cases and jail sentences were suspended. In the other case the violator was placed on summary probation.

The State Senate Interim Committee on Licensing Business and Professions has proposed to write a new chapter in the law to provide for the licensing of photogrammetrists. (See June, 1954, AE for background story.) The new registration would be optional but would limit the use of the title to be selected to those who obtained registration. Another pending proposal pertains to legislation to provide licensing for designers and draftsmen. The California SPE is studying the several proposals and also the suggestion that mechanical and electrical engineers be designated in the registration law on a functional basis, as presently applies to civil engineers, instead of the basis of title only.

Wisconsin Statement On Listings

The Wisconsin board has acted to clarify the legality of engineering listings in classified directories. The board states that under the heading, "Engineers — Registered Professional," only those holding current registration certificates may be shown. No other main or subheading should use the word, "Engineer," as the first word of the heading, it is stated. Subheadings should be the names of recognized branches and the term "Architectural Engineer," may be used only if the individual is qualified as a registered architect.

Main headings or subheadings such as "Hoisting Engineer," "Stationary Engineer," etc. may be used in a listing provided they are placed in their proper alphabetical order and do not have "engineer" as the first word in such heading and provided the listing does not contain in part a recognized branch of professional engineering.

The Wisconsin body issued its statement to eliminate confusion existing in the public mind as to who is qualified to offer to perform architectural and professional engineering services and to practice the two professions.

Minnesota High Court Upholds Registration Ordinance

A decision of the Supreme Court of Minnesota holds that a city may require that certain plans bear the endorsement of a registered professional engineer. The city council of Minneapolis had required that all plans for the installation of heating equipment where the space to be heated exceeds 100,000 cubic feet must be prepared and signed by a registered professional engineer. A plumbing company's plans admittedly complied with all pertinent regulations except that they were not prepared or signed by a P.E. The building inspector refused to issue a permit on this basis and the company proceeded with the installation nevertheless. The city prosecuted for the violation and the company contended that the P.E. requirement was unreasonable and unconstitutional.

The principal argument of the company was that since the ordinance is very complete in detailed mechanical requirements and specifications of installation and construction, it was unreasonable to further specify that a P.E. is the only person who can prepare and sign the plans.

The Supreme Court referred to the state registration law making it unlawful to practice professional engineering without a certificate and then held that since a heating installation "certainly involves the safeguarding of life, health, and property," the city could act in pursuance of the state law. The court said, "The inherent dangers in the operation of any heating plant make it necessary that the plans and design of such equipment be faultless. The city council may have felt that only a 'registered engineer' could be relied upon to prepare such plans. While it does appear true that such plans are checked by the city building inspector. there is always the very real chance that a defect may go unnoticed. The number of plans that have to be checked each year in a city the size of Minneapolis must be considerable. The very checking process itself must be easier and faster when uniformity and accuracy can be more readily depended upon. The minimum qualifications necessary for 'registration' would seem to indicate that work prepared by persons thus qualified would be more likely to possess these qualities."

The court rejected the argument that the ordinance was invalid because it exempted smaller installations. "... it may well be that the city council felt that the greater potential danger to public welfare and safety warranted the closer regulation and examination of larger heating installations. The likelihood of complexity in larger installations might also warrant the requirement of more uniform and reliable plans." A classification in an ordinance need only rest on some basis which is reasonable, natural, and proper in relation to the danger sought to be controlled and which discloses the propriety of differentiation, the tribunal held.

Ohio Acts Against "Designer"

A PENDING Ohio case will test the question whether an unregistered person may engage in architectural practice if he does not designate himself as an "architect." The Ohio Board of Architects has secured an indictment against a person who had termed himself a "designer" and had prepared plans and specifications for four buildings. The state board had considered indictment a year before but had delayed action on the promise that the practitioner would take the Ohio examination for an architect's license. Having failed to take the test, the board proceeded with the indictment on the ground that the nature of the services performed was within the scope of the architectural registration law regardless of the title used.

It appears that the principle of the case is equally applicable to the engineering registration law. It is understood that the case does not involve the question of drawing the line between engineering and architectural practice as the indicted practitioner does not hold a license in either field. —*End.*

N.S.P.E. Believes

COOPERATION WITH REGISTRATION BOARDS

BY PAUL H. ROBBINS, P.E.

Executive Director

N.S.P.E.

THE recent meeting of the National Council of State Boards of Engineering Examiners in St. Paul, Minnesota, emphasizes again the close relationship between the work of the State Boards of Registration and the professional development of engineering. NSPE has long believed, as was so ably pointed out in the report of the Executive Secretary of the NCSBEE, that registration has done much to help establish engineering as a profession and to increase public esteem of engineers.

It is for this reason that so much of NSPE's activity is directed toward a greater recognition of the importance of registration in engineering. Not only has the National Society supported NCSBEE with a token financial contribution to its work, but also it has worked very closely with a number of NCSBEE committees in improving registration procedures generally and endeavoring to secure information and suggestions for the assistance of Registration Boards. Currently, the National Society's Registration Committee is conducting a survey of the attitudes of professional engineers on a number of elements involved in the administration of our registration laws.

NSPE further believes that close cooperation between the Registration Boards of the respective States, and the State Society of Professional Engineers, is essential for the full development of the profession in each State. It is obvious, of course, that the three, five, or seven members of the Registration Board are working continuously for betterment of the engineering profession. But their efforts are even more enhanced when supplemented by the efforts of the professional society. This close cooperation has paid off in improved public recognition of the engineering profession, in united efforts toward the common objectives of both groups, and a resulting improvement in the public concept of the engineering profession.

One item of cooperation which has been particularly beneficial has been the recognition given by the professional engineers of a state to those who have successfully met the requirements for registration. In some states, this takes the form of a letter of congratulation to the newly-registered engineers; in others, the presentation of the certificate in a formal meeting, to which the individual's friends and relatives may be invited, has given considerable prestige and honor to this additional recognition of professional capabilities.

Each of our Registration Laws has in it some provision similar to that enacted by Congress in the Registration Law for the District of Columbia. It sets forth the objective of the law as, . . . "to safeguard life, health and property and promote the public welfare, the practice of engineering . . . is hereby declared to be subject to regulation in the public interest." Article II of the NSPE Constitution states: "The objectives of the National Society shall be the advancement of the public welfare and the promotion of the professional, social and economic interests of the Professional Engineer." It is more than coincidence that the objectives of our Registration Laws and the objectives of the National Society of Professional Engineers should both contain the statements, to "advance (promote) the public welfare."

NSPE believes that the objectives of our Registration Laws and the objectives of NSPE go hand in hand. By close cooperation between the Professional Engineers of the Nation and those charged with the administration of its Registration Laws, continued improvement in the professional status of engineering is bound to result.—*End.*

Idaho Society Members Vote to Act On Extensive Salary Program

At a statewide meeting in Idaho on September 11, the members of the Idaho Society of Professional Engineers accepted a report of the Salary Study Committee, and in doing so went on record as: (1) recognizing the salary situation as a contributing cause to unsatisfactory professional conditions; (2) authorizing a program of action to bring about a more equitable compensation for professional engineers; and (3) disapproving professional unions and bargaining groups.

As part of their program to bring about an increase in professional engineering salaries, the Idaho P.E.'s plan to gather data on engineering salaries and positions in Idaho from both employers and employees and to make this factual information available to the employers of engineers throughout the state. In line with the committee's recommendations it is further planned to develop standards of employment and salaries that can be recommended as being commensurate with the value of the professional services of the engineer. The provisions of such information to an employer, however, the committee stressed "should be done as a matter of cooperation and mutual concern rather than collective bargaining," and it "deplored" conditions that made it seem "necessary or economically advantageous" for engineers to consider affiliation with collective bargaining groups.

Members of the ISPE Committee whose report was adopted by the State Society included: G. A. Riedesel, research engineer, Moscow, chairman; James Martin, head of the Department of Agricultural Engineering, University of Idaho, Moscow; Orland C. Mayer, Idaho Power Company, Boise; James Morris, city engineer, Boise; W. P. Hughes, urban engineer, Idaho Department of Highways, Boise; C. C. Hallvic, highway engineer, Bureau of Public Roads, Boise; and Jay Painter, county engineer, Idaho Falls. Mr. Riedesel, who served as committee chairman, is also president of the Idaho Society.

A BRIDGE OF PEACE
by D. B. Steinman

In human heart was born the plan,
A bridge of peace uniting Man.
Our sons will have the span we wrought;
The world the dream for which we fought.

NSPE Members Are Asked To Appraise Registration Laws

As part of its study of the engineering registration laws in the various states, the NSPE Registration Committee is sending a detailed questionnaire to all members, seeking their opinions on many features of the codes. NSPE Vice President Orland C. Mayer, who is also chairman of the Registration Committee, points out in a letter accompanying the questionnaire that: "The cumulative opinion of the membership will be invaluable in considering ways and means of improving the registration laws and making them more effective."

The questionnaire itself includes fifty-two pertinent questions covering the organization of the state boards, financial considerations, powers of the boards and enforcement, standards and reciprocity, and qualifications of applicants.

Mr. Mayer stresses that the answers and comments requested should reflect individual personal opinion rather than the group opinion of chapters and state societies as such. State and chapter consideration of the items of concern will come, he states, after the committee has completed its study and offered its recommendations.

Annual Report Nears Completion

The 1953-54 Annual Report of the National Society of Professional Engineers is now ready for the printer, and a final draft is being circulated among the members of the 1953-54 and 1954-55 Executive Committees for comment and approval, according to an announcement made at National Headquarters by Paul H. Robbins, NSPE executive director. The completed report will give a comprehensive review of National Society activities for the 1953-54 administrative year, including such points as public service actions, the National Engineers' Week observance, inter-society relationships, and the many actions taken on ethical practices, unity, industrial relations, and the various other problems of the engineer as a professional man.

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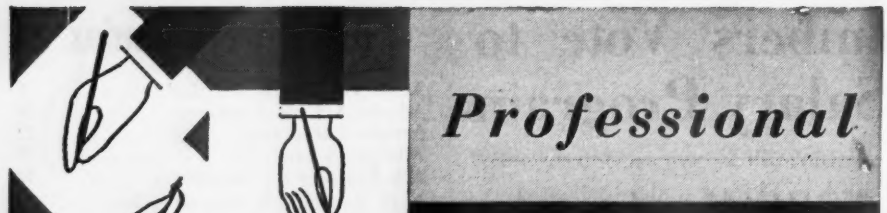

Professional POSTSCRIPTS

This is your department. Your contributions to it are solicited. We want your views on subjects that affect the engineering profession directly or indirectly. Please keep your contributions short, and remember that editing may be necessary to conserve space. Your name may be omitted if you desire.—*The Editor.*

This would seem to be "reprint" month. We have two excellent newspaper stories that we would like to pass along in this edition of —PP—. First, here is a "think" piece that might serve to reorient our thought processes. It is from the Washington (D.C.) *Post and Times Herald* and is written by their outstanding columnist, Malvina Lindsay. Here's Miss Lindsay writing about engineers and other kinds of people.

—PP—

Everyone tells Junior, who will be a sophomore in high school this fall, that he should "go in strong for math." It leads to engineering. Big future there. Besides, the Nation needs engineers. Look at Russia! Fifty-three thousand graduated there this year against less than 30,000 in this country.

Lots of persons look politely puzzled when Junior's sister, who will be a junior at college, says she is majoring in history. It must be "very interesting," but—what kind of a job does it lead to?

She's majoring in history, she explains, because she "loves it." Of course she really should go in for some kind of science, but . . . well she just isn't good at it.

Junior's fair in math, but he's not sure he wants to be an engineer. Maybe he'd rather be a doctor, or even a lawyer.

Much thinking about future careers is going on among the two and a half million students who will soon be in college, and the nearly seven and a half million who will be enrolling in high school. Their parents, likewise concerned, find their thinking complicated by the trends of the cold war. One of these is increased activity on the engineering-chemical front.

Pravda has announced a major reorganization of the Soviet school curriculum to place more emphasis on science and less on the humanities. More time will be given to physics and chemistry, less to languages, literature, history, logic and related subjects. All high school graduates must have a good basis in scientific and technical fields.

The need of engineers and other technologists to meet military needs and expand Soviet production has led to a steady drive to turn out graduates in this field. Thirteen thousand more engineers were graduated this year than last.

This country also needs engineers, scientists and technologists for defense purposes, and for production to meet rising standards of living. It is currently handicapped in its supply by the relative decline in the college population, resulting from the low number of births in the 1930s, and the demand of the armed forces for manpower.

But even more than engineers, the Nation needs persons equipped to tackle its intangible problems, international, political, social and economic. It needs men and women who are educated rather than merely trained, who are able to carry on the Western tradition which provides the climate in which creative enterprises of all kinds flourish best, who in the words of Dr. Wilson Compton, president of the Council for Financial Aid to Education, are encouraged to "seek truth, to try to unravel the endless mysteries of the universe, and to explore the ways to a peaceful society on a planet plagued, now more than ever, with power and pride and poverty."

Badly as technologists may be needed a society overbalanced with them might well cease in time to be free. A race with the Soviet Union to grind out engineers could weaken America in the place where the only real defense against the H-bomb, or the C-bomb, or germ or cosmic ray warfare lies—the strategy of ideas.

Those seeking to step up engineer production do not want that kind of race. While they urge greater efforts to discover scientific and technological talent in high school and college, and more financial aid for the education of students who have this ability, they emphasize that this country must depend upon quality rather than quantity of its technologists. One first-rate engineer, they say, is worth half a dozen narrowly trained, mediocre ones.

Junior, for example, should take up engineering only if he has the necessary aptitudes and interest, and the stamina to follow through in both the professional training and the broader education that business is increasingly demanding of specialists. Attrition in engineering schools is running high because too many youths enroll merely as a means of going places fast.

As to Junior's sister, educators say she has largely settled her own career problem when she says she "loves history." Fortunate is the young person, they point out, who has found an alluring mental road and set out upon it with surety and enthusiasm. Both the market place and the Nation usually have need for such.

—PP—

The next news story from the New York *Times* was sent to us by Engineer R. Cutts, Jr., P. E., of Schenectady, N. Y. As Engineer Cutts points out, even "lawyers have their problems." Here, then, are extracts from the *Times* piece.

—PP—

If you were a lawyer your chance of someday becoming President of the United States might be enhanced. But, on the other hand, you would face the unpopularity that has been the lot of the legal profession as far back as colonial days.

A seven-year survey of the profession, financed by the American Bar Association and the Carnegie Foundation, was completed recently. The study, costing nearly $300,000 and employing some 400 persons on a voluntary and low-compensation basis, rubbed considerable glamour from the calling of some of our most notable citizens. . . .

The first disillusionment is that

lawyers are not conspicuously wealthy, although few go into bankruptcy. However, as a group, they are regarded as excellent credit and insurance risks. Lawyers are described as good joiners, good social mixers, and among the most active and responsible members of the community.

The nationwide average net income for all lawyers is *$7,532*, the survey showed. State-based average net incomes range from a low of $4,824 in Iowa to a high of $9,910 in the District of Columbia. Since 1929 lawyers in non-salaried practice have increased their average net incomes 58 per cent, as compared with 83 per cent for nonsalaried dentists and 157 per cent for nonsalaried physicians. Lawyers' incomes increase between the ages of 50 and 54 and decline after that.

Further statistics show that there are now more than 200,000 lawyers in the nation, of whom 177,000 are in private practice. There is now one lawyer for every 746 persons in this country. And one-sixth of the lawyers are in New York State, with New York City alone having more lawyers than twenty-three smaller states combined. . . .

The survey indicated that lawyers may be the most unpopular persons in the United States. This unpopularity was traced back to Benjamin Franklin, who wrote his opinion of lawyers in Poor Richard's Almanac: "A good lawyer, a bad neighbor."

In our times the lawyer even catches it from poets. Carl Sandburg asked:

"Why is there always a secret singing
When a lawyer cashes in?
Why does the hearse horse snicker
Hauling a lawyer away?"

The survey found, however, that most invectives hurled at lawyers are really misplaced out-pourings of man's eternal complaint about the "injustice of justice." Lawyers and law, it seems, have become confused in the public mind. Another source of public irritation noted in the book is the fee charged by a lawyer. The public feels that legal fees are too high and, whether the client wins or loses his case, the lawyer comes out on top. . . .

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Meet Our Professional Leaders

By Clarence T. Shoch, P. E.,
President, N. S. P. E.

PICTURED and identified briefly on the following pages are the men who will shape the destiny of the National Society during the current year. They are the National Directors, the chosen representatives of the member state societies. Together with the elected officers and the two immediate past presidents of the National Society, they constitute the Board of Directors. The position of this body in National Society affairs may be likened to the combined responsibilities of the Senate and House of our National Government in that there is representation from all state societies, with voting power proportional to the numbers of members represented.

The talents of the National Directors are well recognized. All are men of consequence in one or more of the fields of engineering, working in education, consultation, industrial, or governmental areas. Almost without exception they have acquired their thorough knowledge and well-considered evaluation of professional engineering needs and appropriate programs and activities through personal study of the problems of the profession. Their appreciation of these problems has been brought into even sharper focus by the experience of leadership in chapter and state society activities. They come to the Board with fresh viewpoints and, after briefly surveying and reappraising these problems at the national level, make extremely effective and practical contributions.

The constitution of the National Society calls for a minimum of two meetings of Board members per year. Budgetary necessity now limits us to holding only three. So it is appropriate—and indeed essential—that we give the utmost support to the National Directors in their deliberations and make the most conscientious effort possible to carry out their recommendations and decisions.

The first meeting of a new Board is particularly significant and important, because it is here that the newcomers take the first steps in the transition from local or state professional leadership to national professional leadership. Moreover—and equally significant—it is at this time that they bring us a fresh, new approach to national-level problems, tempered by their very recent experience at the grass roots levels.

FROM their pre-meeting study of the reports of the various committees exploring the many areas of National Society interest and concern, they begin to add a new national perspective to their consideration of the professional programs and problems. From their pre-meeting discussions of any points of debate with other state and local officers and committee chairmen, they are able to offer suggested solutions of any such problems, or at least bring to the national meeting the latest, up-to-the-minute thinking of the lower levels for our further consideration. Finally, not the least of a Board member's responsibilities is that of taking back to his state society a comprehensive report of the discussions of the national meeting.

Since we are now preparing to take part in the Fall Board Meeting on October 15-16 in Omaha, this is a particularly auspicious time for the introduction of the new Board to the full NSPE membership through the pages of the AMERICAN ENGINEER.

To our old members on the Board—greetings, and we know that you continue ready, as always, to carry on the mature, well-considered decisions of the past and to promote aggressively those new actions which will fill long-felt needs in engineering affairs. To those new members serving with us for the first time—congratulations on being chosen for an important post and a hearty welcome to our deliberations. We are counting on you for full participation and to furnish the new spark and fresh viewpoint which characterize the policies and programs of the National Society.

NATIONAL BOARD OF DIRECTORS–1954-55

Alabama. L. W. Peterson, P.E., was born June 18, 1916, in Munising, Michigan. Mr. Peterson was formerly the president of the Alabama Society of Professional Engineers. He is the district manager of the Goodman Manufacturing Company in Birmingham and holds memberships in the Birmingham Engineers Club, American Society of Mechanical Engineers, American Society of Military Engineers, and the American Society of Mining and Metallurgical Engineers.

Arizona. W. A. Burg, P.E., was born in East St. Louis, Illinois, December 4, 1901. He received his B.S. in C.E. from the Missouri School of Mines and Metallurgy. Now a resident of Phoenix, he has recently been appointed administrator of the Pima County Highway Department. His previous experience has included work with various corporations and with both the Ohio and Arizona State Highway Departments. He saw active military duty during World War II, his last assignment being area engineer with the rank of major in Bengasi, Libia.

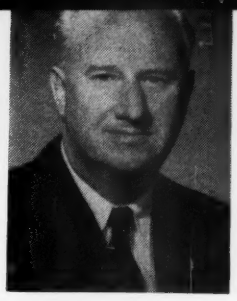
Arkansas. Harold J. Engstrom, Jr., P.E., was born and educated in Little Rock, Arkansas, and received his B.S. in C.E. from the University of Arkansas in 1939. He is now chief engineer of the Arkansas Foundry Co. in Little Rock, by which he was first employed as a draftsman at the age of 18. He served for three years as ship superintendent for repair, Bureau of Ships, U. S. Navy. Mr. Engstrom is a past president of the Arkansas SPE, secretary of the Little Rock Engineers' Club and Arkansas Engineers' Club, and vice president of the Mid-South Section, ASCE.

California. George E. Zelhart, P.E., was born in Cedar County, Missouri, November 8, 1897. He attended Fresno Junior College 1919-1921 and Stanford University. Since 1925 he has been employed by the Pacific Gas & Electric Company. Prior to that date he was employed by the Southern California Edison at Big Creek, California, and the Pacific Telephone and Telegraph Company in San Francisco. He was among the first to become a registered mechanical engineer in the State of California. He has been active in the Fresno Chapter and the California SPE, having served as president of the latter in 1953-54. He is active in the fraternal and civic groups of his community.

Colorado. Alfred J. Ryan, P.E., is a graduate of the University of Colorado, from which he received a B.S. in C.E. with special honors in 1933 and a C.E. degree in 1937. He has been in consulting practice since 1941, first as a partner in Crocker & Ryan, and since 1949 as head of his own firm. He has provided engineering services for highways in Colorado, Oklahoma, and New Mexico, and for various military installations and Federal housing projects. He has recently completed a term as vice president of NSPE. He is a resident of Denver, and is active in many engineering, professional, and civic groups.

Connecticut. A. John Macchi, P.E., was born in New York City in 1912. He received a B.S. in engineering from the University of California in 1936. Since 1946 he has been a consulting engineer in Hartford, Connecticut. He developed the Tube

L. W. Peterson
Alabama



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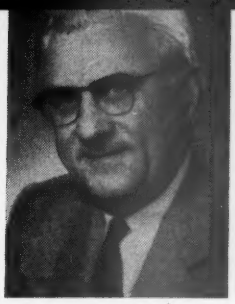

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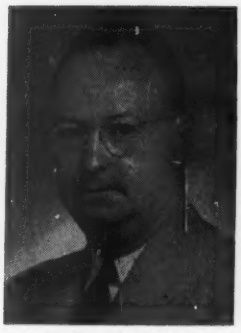

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Georgia

Slab System of construction and other new structural systems. Prior to the establishment of his firm, Mr. Macchi worked in California on the San Francisco-Oakland Bay Bridge and the Peninsula Super-Highway. He has worked for H. J. Brunnier, consulting engineer of San Francisco, in the 15th Naval District (Panama Canal). Mr. Macchi served three years with the USN Seabees in the Aleutian Islands and the Pacific area. He has been active in both the NSPE and the Connecticut SPE, having served as president of the latter in 1952. He is a member of ASCE, ACI, AISC and other engineering societies.

Delaware. W. A. McWilliams, P.E., was born in Dillsburg, Pennsylvania, October 1, 1899. A resident of Dover, Delaware, he is director of the Delaware Memorial Bridge Division and chief engineer of the Delaware State Highway Department. He served overseas with the rank of colonel during World War II, and he holds the Purple Heart and the Bronze Star. He is a member of the American Association of the State Highway Officials, the Interstate Commission on the Delaware River Basin, and the ASCE; and he continues as a colonel in the U. S. Army Reserve.

District of Columbia. J. H. Powers, P.E., born April 15, 1902, in Rome, New York, was graduated from the Clarkson College of Technology with the degree of B.S. in C.E. in 1926. He is employed by the U. S. Bureau of Mines as bridge engineer. Mr. Powers was first vice president of the District SPE from 1950-1951 and president from 1951-52. He is currently serving on the national Constitution and Bylaws Committee.

Florida. E. A. Anderson, P.E., was born in Batavia, Illinois, November 23, 1902. He was educated at Lake Forest University and the University of Illinois, and his early engineering experience was obtained with various South Florida firms during the State's "boom years." After several years with the Florida State Road Department, he joined the engineering staff of Dade County and for the past seven years has been head of that Dade County department. He is also a past president of the Florida SPE.

Georgia. Orbie Bostick, P.E., was born in Headland, Alabama, October 11, 1909. He received a B.S. and M.S. in chemical engineering from Alabama Polytechnic Institute in Auburn. From 1932 to 1937 he was an instructor in the public high schools of Alabama. Since 1937 he has been employed by the Atlanta Gas Light Company, Atlanta, Ga. At the present time he has the title of chief industrial engineer. He has been active in GSPE since 1946. He was a charter member of the Macon Chapter and served it as president, board member and in various other capacities. At the present time, he is president of the Atlanta Chapter. He is active in Kiwanis, Georgia Engineering Society, Red Cross, Boy Scouts, Chamber of Commerce and church activities.

Georgia. Felix E. de Golian, Jr., P.E., was born in New Orleans, La., Nov. 4, 1913. He studied at Georgia Tech and graduated from the U. S. Naval Academy in 1937, with a B.S. degree. Since 1939 he has been a member of the Golian Steel and Iron Co., Atlanta, Ga., and is at present vice president and sales manager. His industrial career was interrupted for war service in destroyers which involved, as final assignment, command of the USS Flusser. He holds the Legion of Merit and Bronze Star Medals. Mr. De Golian is interested in poultry husbandry as well as structural engineering. He belongs to the Northside Kiwanis Club and the Atlanta Area Girl Scout Council. He is a member of the Sigma Chi Fraternity.

Idaho. L. M. Huggins, P.E., was born November 10, 1889, in Conde, South Dakota. He graduated from the University of Oregon in 1912 with a B.S. in C.E. He has worked with Waddell & Harrington, consulting bridge engineers, the Union Bridge and Construction Co., the city engineer's office in Portland, Oregon, and the Oregon Highway Department. With the U. S. Bureau of Public Roads from 1918 to 1951, he was assistant in general charge of engineering and construction for the Alaska Highway, 1942-44, and district engineer, 1944-51. He retired in 1951 and in February, 1953, set up his own consulting practice in Boise. In addition, in October, 1953, he became associated with the Idaho Highway Department.

Illinois. George DeMent, P.E., was born in Chicago, Illinois, in 1904. He was educated at the University of Illinois. From 1927 to 1939 he worked on the construction of an Intercepting Sewer System and Sewage Treatment Works of the Sanitary District of Chicago. Since 1939 he has been associated with the City of Chicago, successively as a resident engineer on the first subways in Chicago; as assistant chief engineer in the Department of Subways and Superhighways; as administrative engineer in the Department of Public Works and presently as Acting Commissioner of Public Works.

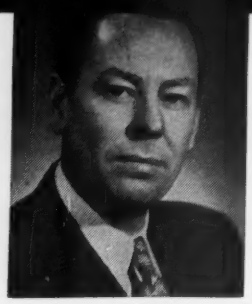
Illinois. L. I. Osborn, P.E., was born in Cable, Ill., June 18, 1905. He was educated at Augustana College, Rockford, Ill., and the University of Michigan at Ann Arbor. After working with various engineering firms, as well as briefly with the TVA, in 1937 he organized the consulting firm of Osborn and Roys, Inc. From 1940 to 1943 he was engaged in special assignments with the Army Engineers, and in 1944 he established his present firm—Lee I. Osborn, consultant in engineering and heavy construction. His home is in Sherrard, Ill.

Indiana. L. E. Easley, P.E., was born October 8, 1908, at Jerseyville, Illinois. He was Indiana state director from 1947-48, vice president in 1949 and 1950 and president, in 1951. Mr. Easley is supervisor of Structural and Mechanical Engineering, Plant Engineers Office, Allison Division of General Motors Corporation, Indianapolis, Indiana. He is in *Who's Who in the Midwest,* is a member of the Building Congress of Indiana, the Indiana Engineering Council and is a Mason.

Kansas. Leland S. Hobson, P.E., was born in Kingman, Kansas, October 6, 1902. He received a B.S. in E.E. from Kansas State College in 1927. Since 1946 he has been a professor engaged in Industrial Management Engineering at Kansas State College, and he has also been associate director of the Engineering Experiment Station since 1952. Professor Hobson was pre-

F. E. de Golian, Jr.
Georgia

L. M. Huggins
Idaho



George DeMent
Illinois

L. I. Osborn
Illinois

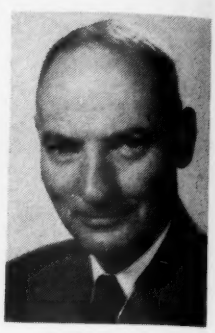
L. E. Easley
Indiana

Leland Hobson
Kansas

O. W. Turpin
Maryland

E. R. Gardner
Massachusetts

J. Frederick Way
Massachusetts



P. S. Calkins
Michigan

viously associated with the General Electric Company. He has had various offices in the Tri-Valley Chapter of the Kansas SPE, and has for three years been chairman of the Public Relations and Engineers' Week Committee for KSPE. He has been elected to Sigma Tau, Sigma Xi, and Phi Kappa Phi, is president of the Kansas City Chapter of the Society for Advancement of Management, and is a member of the American Society for Engineering Education, and other engineering and industrial management groups.

Maryland. O. W. Turpin, P.E., was born November 15, 1900, in Washington, D. C. He is a graduate of Baltimore Polytechnic Institute and received his engineering education from Johns Hopkins University in Baltimore. Mr. Turpin is a past president of the MSPE. He is a member of the ASCE, AWWA, and several other organizations. He is a partner in the firm of Turpin, Wachter & Associates in Baltimore.

Massachusetts. Edwin R. Gardner, P.E., was born in Winthrop, Massachusetts, February 21, 1908. He graduated from M.I.T. with B.S. and M.S. degrees in electrical engineering. He has been employed by General Electric Company since 1931, being engaged in the design and manufacture of electrical measuring equipment since 1934 at the Meter and Instrument Department, West Lynn, Mass. For the past seven years he has been carrying out new product development for the Aircraft Instrument Division. Mr. Gardner is a past president and former secretary of the North Shore Chapter of the MSPE and a past chairman of the Constitution and Bylaws Committee of the State Society. He is currently a member of the NSPE Constitution and Bylaws Committee. His home is in Swampscott.

Massachusetts. Admiral J. Frederick Way, P.E., is a 1927 graduate of the U. S. Naval Academy. He is an expert in underwater guided missiles and submarine construction. He has had extensive sea duty and has also been an instructor at the Academy in the Department of Electrical Engineering. He was also in charge of the U. S. Naval Torpedo Station at Alexandria, Virginia, for a period beginning in December, 1945. At the present time Admiral Way is serving as civil defense director for the City of Lowell, Massachusetts.

Michigan. P. S. Calkins, P.E., was born October 24, 1902, at Ann Arbor. He received his B.S. in engineering from the University of Michigan in 1924. After employment with various firms, in 1944 he set up his own practice as a consultant in structures and foundations in Detroit. In 1948 he moved his office to Bloomfield Hills, Mich. Since Feb. 15, 1954, he has been president of the newly-organized Emmerling, Calkins, and Mortenson, Inc., Architects & Engineers. He was a charter member of the Detroit Chapter, MSPE, and served in various official capacities, including a term as president. He was also president of the Michigan SPE for the 1952-53 term. He is a member of the American Concrete Institute, the ASCE, and the Engineering Society of Detroit.

Michigan. Otto H. Hall, P.E., was born in Ionia County, Michigan, July 27, 1904. He attended Michigan State College, pursuing courses in civil engineering, followed by special studies in engineering and business. Since 1940, he has been in charge of engineering and architecture for the Michigan Department of Conservation. Prior to that time Mr. Hall held engineering positions with the Civilian Conservation Corps, Road Construction Contractors and State Highway Department. He was one of the organizers of the Michigan Society of Professional Engineers—vice president, 1946-47; president, 1948; and national director 1949-1954. He served as director for the Michigan Engineering Society four years, and is currently a director of the Lansing, Michigan, Masonic Hi-12 Club.

Michigan. Lester J. Richards, P.E., was born in Coopersville, Michigan, November 4, 1893. He received a B.S. in Mechanical Engineering from the University of Michigan in 1917. He has worked for The Dow Chemical Company ever since graduation, serving successively as draftsman, chief draftsman, assistant chief engineer, chief engineer, and now director of engineering. He has been active in community affairs, serving on the Board of Education for twelve years, and is now president of the Midland Community Center. He has been active in both the Saginaw Valley Chapter and Michigan SPE having served as president of the latter in 1953-54. He is a member of other engineering societies, including ASME.

Minnesota. Hibbert Hill, P.E., born in Boston, Mass., October 11, 1900, is chief engineer with the Northern States Power Company of Minneapolis, with which he has been associated since 1936. In 1923 he received his B.S. in C.E. from the University of Minnesota, where he later served as an instructor in 1924-28. He has done engineering work with several Government agencies, and in 1942-45 was a Lt. Col., U. S. Army Corps of Engineers. He is the author of various technical articles and a member of Tau Beta Pi, ASCE, the American Society of Military Engineers, and other groups.

Minnesota. Nordahl T. Rykken, P.E., was born near Willmar, Minnesota, on May 31, 1904. He received a B.C.E. degree from the University of Minnesota in 1929 and an M.S.C.E. degree in 1931 from the same school. Since 1948 he has been assistant manager of Whitney's, a ready-mixed concrete firm. Prior to this time he was a highway engineer for the U. S. Bureau of Public Roads, field and structural engineer for the Portland Cement Association, and assistant commissioner of Aeronautics for the State of Minnesota. He is a former president of the Arrowhead Chapter, and has served the Minnesota Society as treasurer, director and president. He also served as a former president of the Minnesota Federation of Engineering Societies and is affiliated with the Duluth Engineers Club, and the Minnesota Surveyors and Engineers Society. He is a member of Chi Epsilon, Tau Beta Pi, and Sigma Xi and of the Duluth Chamber of Commerce and the American Concrete Institute.

Missouri. Harold J. Bruegging, P.E., was born in Jefferson City, Missouri, April

Otto Hall
Michigan

L. J. Richards
Michigan

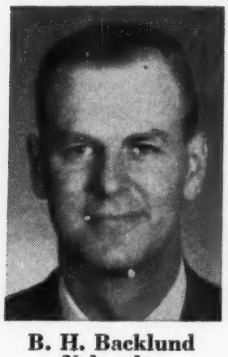
Hibbert Hill
Minnesota

N. T. Rykken
Minnesota

H. J. Bruegging
Missouri

J. B. Butler
Missouri

A. C. Kirkwood
Missouri



B. H. Backlund
Nebraska

H. B. Blodgett
Nevada

E. R. Boaté
New Jersey

8, 1911. He received a B.S. in civil engineering from the Missouri School of Mines in 1932. Since 1948 he has been gas engineer for the Missouri Power & Light Company, having held other positions in that firm since 1935. He is first vice president of the Missouri SPE and a past president of the Engineers' Club of Jefferson City, a chapter of MSPE. He has held offices in various civic, church, and youth groups and City commissions.

Missouri. J. B. Butler, P.E., is a professor and chairman of the Department of Civil Engineering, Missouri School of Mines. He was born May 11, 1895, in Omega, Oklahoma. He received his B.S. in C.E. in 1915, and his B.S. in Education in 1924 from the Oklahoma A & M College. He also received a C.E. degree in 1922 and an M.S. in C.E. in 1924 from the Missouri School of Mines. He is a member of Chi Epsilon (C.E. honor), Theta Tau (engineering professional), Phi Kappa Phi (honor), the ASCE, and the Engineers Club of St. Louis (director 1954-56). He has been listed in *Who's Who in Engineering* since 1925 and in *Who's Who in America* since 1941.

Missouri. A. C. Kirkwood, P.E., was born in Colorado Springs, Colorado, June 17, 1900. He graduated from Stanford University in 1923 with an A.B. in M.E. and received an M.S. in E.E. in 1924 from the Massachusetts Institute of Technology. He is in partnership with his son, Thomas, in the Kansas City consulting engineering firm of A. C. Kirkwood & Associates, which he founded in 1947. Prior to that date Mr. Kirkwood was principal engineer for Burns & McDonnell Engineering Company, Kansas City, having joined that organization in 1930. From 1924 to 1929 he was with Wood & Weber, consulting engineers in Denver, Colorado. Mr. Kirkwood is vice president of the Missouri SPE, was chairman of its Western Chapter, and for two years was that chapter's state director. He is past president of the Engineers Club of Kansas City, and a member of the Rotary Club of Kansas City and several engineering societies. He has served for many years as a director of the Kansas City Area Council, Boy Scouts of America.

Nebraska. Brandon H. Backlund, P.E., was born in Amarillo, Texas, June 13, 1918. He received his civil engineering education at the University of Nebraska and at Iowa State College where he received his B.S. in C.E. degree in June, 1941. He has also had post graduate training in various Army service schools during World War II. Subsequent to World War II, he worked with several engineering and construction firms in capacities of engineer, estimator and consultant until April of 1951 when he opened his own practice in civil and structural engineering. He is presently the head of a firm of consulting engineers and architects in Omaha. He was one of the founders of the Nebraska SPE and its chapters and has been active in various positions on the Board of Directors and on committees since the society was chartered. He is a member of ASCE, SAME, AWWA, ACI, and the Nebraska Engineering Society. Other activities include membership and committee work in various civic and service groups.

Nevada. H. B. Blodgett, P.E., was born near Knob Noster, Missouri, February 4, 1898. He received a B.S. in C.E. from the University of Arizona in 1928, an M.S. in 1929, and a C.E. in 1933, also from Arizona. Major professional activity has been in the field of engineering education, but he has carried on a small consulting practice aside from institutional activity. Professor Blodgett was a member and secretary of the South Dakota State Board of Engineering and Architectural Examiners for six years before moving to Nevada and becoming professor and head of the Civil Engineering Department at the University of Nevada. He is active in various other engineering organizations, including ASCE, ASEE, Sigma Tau, Tau Beta Pi.

New Jersey. E. R. Boaté, P.E., was born in Brooklyn, N. Y., and achieved his engineering education at Columbia University and through Cooper Union Institute and Rutgers University extension courses. He was chief engineer of the North Jersey Quarry Co. for 18 years; then was vice-president and treasurer of Bacon-Pietsch Co., New York City; and now is president and consulting engineer with his own firm, E. R. Boate Co., Inc. He is also serving as city engineer of Rahway, N. J., and is a past president of the Professional Engineers Society of Union County.

New Jersey. W. Earl Christian, P.E., was born in Trenton, N. J., January 27, 1898. He studied at the University of Illinois, 1916 to 1918, and served with the Army Engineers in World War I. During the past twenty years he has been in the contracting and construction field. Mr. Christian is associated with the Hefler-Snyder Company, of Garwood, N. J., as chief engineer. He is a member of the Zoning Board of Adjustment in his home community, secretary-treasurer of the New Jersey Bituminous Concrete Association, and a member of ASCE. He is a former president of the Raritan Valley Society of Professional Engineers and trustee of the New Jersey SPE.

New Jersey. Frank F. Hohnholt, P.E., was born in Jersey City, New Jersey, October 17th, 1899. He attended Cooper Union Mechanics Institute, and C.C.N.Y. At the present time he is employed by Superior Combustion Industries, Inc. of New York City as manager of the Water Tube Boiler Division. Prior to this connection Mr. Hohnholt was in charge of Sales Engineering for packaged steam generators for Foster Wheeler Corporation. During his residency in Leonia, N. J. he served that borough for six years (two terms) as councilman, one of the years served as president of the Council. He represented the borough on the Oberpeck Valley Sewer Survey Committee and was elected its chairman. He is an active member and past president of the Bergen County Society of Professional Engineers. He is also a member of the American Society of Mechanical Engineers, Naval Architects and Marine Engineers and the National Society of Power Engineers.

New Mexico. Walter K. Wagner, P.E., was born in Eddyville, Nebraska, December 19, 1906. He received a B.S. in C.E. from the University of New Mexico in 1938. From 1938 to 1941, Mr. Wagner was employed with various agencies of the Federal Government. He was research en-

W.E. Christian
New Jersey

F. F. Hohnholt
New Jersey

W. K. Wagner
New Mexico

C. A. Dutton
New York

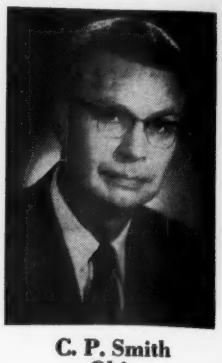
L. J. Sforzini
New York

R. B. Rice
North Carolina

R. H. Myhra
North Dakota

R. A. Freese
Ohio

Ronald Gordon
Ohio



C. P. Smith
Ohio

gineer with the New Mexico State Highway Department Bureau of Materials from 1941 to 1948. Since 1948, he has been chief engineer of Albuquerque Gravel Products Company. He served as secretary-treasurer 1947-1949, and as vice president 1949-1950 of the New Mexico SPE. He is a member of ASTM and ACI.

New York. C. A. Dutton, P.E., born January 1, 1899, at Oneida, New York, is a graduate of Massachusetts Institute of Technology with an S.B. in general engineering. He was president of the Erie County Chapter from 1950-51. Mr. Dutton is now company director and manager of Construction Sales for the Buffalo Electric Company, Inc. He is a member of the Niagara Falls Country Club, American Legion, Buffalo Chamber of Commerce, and several other organizations. He has held several offices on the state and national levels.

New York. Lewis J. Sforzini, P.E., is a graduate of Cooper Union, which awarded him a B.S. degree in mechanical and electrical engineering in 1917 and the degree of Mechanical Engineer in 1942. He has been associated with the Eastman Kodak Company in Rochester for 33 years and is at present power engineering consultant at Kodak Park. He is a past president of Monroe County Chapter, a former state membership chairman, a former zone director, and has been on the executive committee of New York State SPE for three years. He is at present vice president of NYSSPE. He is a member of the Rochester Chamber of Commerce and ASME.

North Carolina. Robert B. Rice, P.E., was born in Woods Hole, Massachusetts. He was awarded his B.S. in M.E. from Tufts College in 1926 and his M.E. degree in 1930. He earned the A.M. degree at Columbia University in 1936. Since 1936 he has held the following positions in the University of North Carolina: associate professor of M.E., professor of M.E., professor of experimental engineering, and professor of internal combustion engines. During the war he was appointed head of the Department of Mechanical Engineering and is now head of the Department of Diesel and I.C. Engines. He has served as governor and president of the North Carolina State Society. He has held many offices of various engineering societies including state presidency of ASME and ASHVE. He is a member of Tau Beta Pi, Pi Tau Sigma, Zeta Psi, and national and local civic groups. He is a member and past president of the N. C. Registration Board.

North Dakota. R. H. Myhra, P.E., born May 14, 1903, in Wahpeton, N. D., was graduated from the North Dakota School of Science. He has been employed by the North Dakota State Highway Department and was county engineer of Cavalier County from 1934 to 1936. He served with the U. S. Corps of Engineers from 1942 to 1945 and is now with the Truax-Traer Coal Co., Minot, N. D. He has held various offices in the North Dakota SPE, including the presidency in 1952.

Ohio. Raymond A. Freese, P.E., a native of Cleveland, received his degree in civil engineering from Case Institute of Technology. He is district manager of Armco Drainage and Metal Products, Inc. Prior to his affiliation with Armco, he was associated with a consulting engineering organization, contractor's engineer, and with the Ohio Highway Department as assistant division engineer. He is a charter member of the Cleveland SPE and held various chapter offices including the presidency in 1949. He is a past president of the Ohio SPE and is currently serving as chairman of NSPE Inter-Professional Relations Committee.

Ohio. Ronald A. Gordon, P.E., was born in Morgan County, Ohio, January 18, 1910. He received a B.C.E. degree from Ohio State University in 1935. From 1935 to 1939 he was a highway engineer in Ohio. In 1940 he became associated with the Clinton Construction Company at Wilmington, Ohio. In 1946, Mr. Gordon became a partner and the company expanded into the concrete business. In 1953 the contracting part of the business became The Clinton Asphalt Paving Co., which Mr. Gordon now serves as president. He has served two terms as vice president of Ohio SPE, and he is active in various business and civic groups.

Ohio. Colonel Charles P. Smith, P.E., was born in Fostoria, Ohio, May 17, 1905. He is a civil engineering graduate of Ohio State (1929) and also a graduate of the Army Command and General Staff School (1942). He has been a bridge designer, Ohio Highway Department, 1926-1940; strategic planner, War Department General Staff during World War II; turnpike engineer and executive secretary, Ohio Highway Department, 1949-1952; and executive assistant Ohio Turnpike Commission since August 1, 1952. Col. Smith is a past president of the OSPE and also of the Department of Ohio of the Reserve Officers Association. He belongs to Tau Beta Pi, Theta Tau, Tau Kappa Epsilon, Scabbard and Blade, and the Engineers Club of Columbus.

Oklahoma. C. A. Dunn, P.E., was born in Stocking, S. D., September 9, 1901. He received a B.S. in C.E. from Wisconsin University, C.E. and M.S. degrees in C.E. from Oklahoma A&M College, and a Ph.D. in C.E. from Cornell University. Since 1945 he has been executive director of the Division of Engineering Research and professor of civil engineering, Oklahoma Institute of Technology, Oklahoma A&M College. He was president of OSPE in 1948. Dr. Dunn is a member of the ASCE, American Society for Engineering Education, Phi Kappa Phi, Sigma Tau and Chi Epsilon, and various civic groups. He is listed in *Who's Who in America.*

Oklahoma. Gerald W. McCullough, P.E., was born in Lynnville, Indiana, April 1, 1904. He received a B.S. in M.E. at Oklahoma A&M College, 1925. He was employed by Phillips Petroleum Company in 1925, and worked in Natural Gasoline & Gas Department until 1943, becoming chief engineer in 1937. He was made assistant manager Defense Plant Division, 1943, and manager, 1944. He was appointed vice president and general manager, Phillips Chemical Company, wholly owned subsidiary of Phillips Petroleum, in 1948, and executive vice president and general manager, 1951. He became chairman, Operat-

C. A. Dunn
Oklahoma

G. W. McCullough
Oklahoma

A. H. Kidder
Pennsylvania

R. F. Miller
Pennsylvania

E. K. Nicholson
Pennsylvania

D. C. Peters
Pennsylvania

Alberto Hernandez
Puerto Rico

F. W. Cullinan
Rhode Island

R. K. Rouse
South Carolina

Warner Howe
Tennessee

ing Committee, Phillips Petroleum Company and subsidiaries, 1951, and vice president, Phillips Petroleum Company and chairman, Operating Committee in 1953. He was second vice president of the Oklahoma SPE in 1951 and president in 1952. He was a national director and member of the OSPE Planning Board in 1953 and 1954. He is now co-chairman, NSPE Public Relations Committee, and a member of Sigma Chi and various industry and engineering societies. He is also active in Rotary and other civic groups.

Pennsylvania. Allan H. Kidder, P.E., was born in Proctor, Vt., in 1899. He received his B.S. in E.E. from Massachusetts Institute of Technology in 1922 and a masters degree in E.E. from the same school in 1923. He has been employed by Philadelphia Electric Company since 1923, and is presently engineer in charge of its Testing Division. He has been active in both the Philadelphia Chapter (president in 1951), and the Pennsylvania Society since 1948, having served as a vice president of the latter in 1950, and as national director since 1952. He was chairman of the Constitution and Bylaws Committee of NSPE during the two years ended in 1954. He is a fellow, AIEE; director of The Engineers' Club of Philadelphia; secretary of the Philadelphia Council, American Society for Testing Materials; chairman of the Cable Engineering Section, Association of Edison Illuminating Companies; and has been active in various civic groups.

Pennsylvania. Robert F. Miller, P.E., of Tamaqua, Pa., is a consulting engineer to a number of Schuylkill County municipalities and industries. Currently serving as president of the Pennsylvania SPE, he has long been recognized for his work in behalf of the profession. He was one of a group of members of the Reading Chapter who helped organize the new Anthracite Chapter in 1946 and later served it as president and state director. Mr. Miller was also one of the leaders of the group which successfully promoted the registration law passed by the Pennsylvania Legislature in 1945. He is also known for his work in Lions International and for his interest in community service. He also belongs to the AIMME, SAME, the Engineers' Society of Pennsylvania, and the Pennsylvania Sewage and Industrial Wastes Association.

Pennsylvania. E. K. Nicholson, P.E., born May 23, 1899, Lakewood, Ohio, graduated from Ohio State University with a B.M.E. in 1921 and an M.E. in 1928. He is a member of Franklin Institute, ASME, and Phi Kappa Psi. Mr. Nicholson has held several offices on the state and national levels. Presently, he is chief engineer of Rohm & Haas Company's Lennig Plant in Philadelphia.

Pennsylvania. D. C. Peters, P.E., President and General Manager of the Mellon-Stuart Company, Pittsburgh contracting engineers, graduated from Marquette University in 1938 with a B.S. in C.E. He is a member of various engineering societies, as well as the Young Presidents' Organization, and has been active in civic and civil defense planning in the Pittsburgh area. He has been chosen as one of one hundred young leaders of Pittsburgh's future by the local Chamber of Commerce and *Time Magazine* jointly.

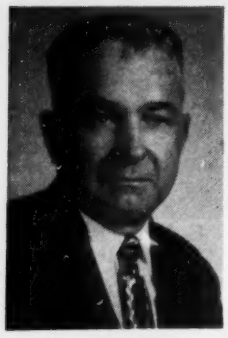
Puerto Rico. Alberto Hernandez, P.E., was born June 6, 1903, in Mayaguez, P.R. He received a B.S. in C.E. from the University of Puerto Rico in 1926 and an M.A. from Harvard in 1935. He has taught in the University of Puerto Rico's College of Agricultural and Mechanical Arts and has done engineering work in various capacities with agencies of the Island's government. He is now chief, Technical Section, Puerto Rican Field Office, Public Housing Administration. He is a member of numerous professional engineering groups and of the New York Academy of Sciences.

Rhode Island. Francis W. Cullinan, P.E., was born in New Bedford, Massachusetts, December 26, 1903. He received his B.S. in C.E. from Manhattan College, New York, N. Y., in June, 1927. For the first five years after his graduation he worked for his late father who was in the general contracting business. In June of 1932, Mr. Cullinan became Deputy Inspector of Buildings of the City of Providence, R. I., an office he held until he resigned in 1951 to take a position with Charles A. Maguire & Associates. He has been active in the State Society and is one of its charter members. He was a member of the committee that sponsored the Rhode Island Registration Act before the Legislature in 1938. He has served as a member of the Rhode Island State Board of Registration for Professional Engineers and Land Surveyors since May 1943.

South Carolina. R. King Rouse, P.E., was born March 15, 1905, in Valdosta, Ga. His academic and technical education was secured through attendance at schools in his home state and included the study of mechanical engineering at the Georgia School of Technology. During 1936 he organized his present firm, R. K. Rouse Company, which represents several manufacturers of heating equipment. He has been a member of NSPE since 1943 and was active in organizing the South Carolina Society, being its first president in 1948. Membership in other local and national organizations includes ASHVE of which he is on the Board of Governors of the South Carolina Chapter.

Tennessee. Warner Howe, P.E., graduated from Cornell University in Civil Engineering in 1941. He worked with the U. S. Engineers, 1941-42, in a civilian capacity, as engineer on the design of the Panama Canal Locks, Structural Section. From 1946-48, he worked with Gardner & Howe, Structural Engineers, Memphis, as Chief Designer and since 1949 has been a partner. Mr. Howe was president of the Memphis Chapter in 1951.

Texas. Noah E. Hull, P.E., was born in Defiance County, Ohio, and educated in public schools in Noble County, Indiana. He received a B.S. in C.E. from Purdue University in 1917. Since January, 1951, he has been vice president and general manager, Hughes Gun Company, Houston, Texas, operating Dickson Gun Plant for the Army Ordnance Corps. Prior to this assignment, Mr. Hull spent 12 years with General Motors Corporation in construction and plant engineering work; four years as plant engineer, Firth Carpet Co.; four years as chief engineer for National Gypsum Co., operators Bluebonnet Ordnance Plant, McGregor, Texas, and five



Noah E. Hull
Texas

C. M. Ware
Utah

J. B. McGaughy
Virginia

L. R. Durkee
Washington

L. C. Gates
West Virginia

H. G. Kennedy
West Virginia

E. J. Kallevang
Wisconsin

Harold Trester
Wisconsin

years (1946-1951) as manager, Plant Engineering Division, Hughes Tool Company. He has been active in the San Jacinto Chapter and Texas Society as chapter officer and TSPE director-at-large. He is a member of Triangle and Tau Beta Pi, Houston Engineers Club, ASCE, American Ordnance Association, Rotary Club, and the Houston Club, and is active in various civic groups.

Utah. Charles M. Ware, P.E., was born in Salida, Colorado, June 12, 1899. He received a B.S. in M.E. from Colorado University in 1923 and an M.E. from the same school in 1928. Since 1932 he has been the proprietor of the engineering supply firm, Photo-Blue Company. Prior to 1932 Mr. Ware was assistant superintendent of an oil refinery, industrial engineer for a natural gas firm and spent some years in power plant work. He served as president of the Utah Society of Professional Engineers in 1940-1941. He is a member of Sigma Tau, Kiwanis and other fraternal groups.

Virginia. J. B. McGaughy, P.E., born November 5, 1914, in Norfolk, Virginia, received a degree of B.S. in C.E. from Duke University in 1938. He is a past president of the VSPE and is a member of the Engineers Club of Hampton Roads, American Concrete Institute, Rotary Club, Virginia Club and Norfolk Yacht & Country Club. Mr. McGaughy is senior partner in John B. McGaughy Associates, Consulting Engineers.

Washington. L. R. Durkee, P.E., was born in Delta, Colo., September 14, 1899. He received a B.S. degree in A.E. from Montana State College in 1921 and an honorary doctorate in engineering from the same school in 1948. He has practiced his profession in the Pacific Northwest since graduation, and since 1933 with various agencies of the Federal Government administering programs of public works. He has served as vice-president and president of the Seattle Chapter and as president of the State Society. He is a member of various professional and civic associations.

West Virginia. Leslie C. Gates, P.E., was born at Dorothy, West Virginia, November 17, 1918. He received a B.S. in C.E. from Virginia Polytechnic Institute in 1940. For a period of one year he worked for the Solvay Process Company on plant expansion in Hopewell, Virginia. In 1941 he entered the service and was a major in the Corps of Engineers when he was released to inactive status in 1946. Since 1946 he has been an Associate in the Ferguson-Gates Engineering Company, a consulting firm dealing primarily with the mining industry. He was first president of the Appalachian Chapter and was the president of the West Virginia SPE in 1951. He is a member of AIME and ASCE, past president of the Beckley Area Chamber of Commerce, and an elder in the Beckley Presbyterian Church.

West Virginia. Harry G. Kennedy, P.E., was born in Coal Run, W. Va., May 19, 1903. He received his B.S. in E.M. from West Virginia University in 1926 and an M.S.E.M. from the same school in 1928. Since 1932 he has been with the Kanawha Coal Operators' Association and has been its executive secretary from 1941. Prior to 1932 he was a combustion engineer with the Carbon Fuel Company and Wyatt Coal Company. He has been active in the Charleston Chapter and W. Va. SPE, having served as president of the latter in 1947. He is a member of Sigma Gamma Epsilon, other engineering societies including AIME, and various civic groups.

Wisconsin. E. J. Kallevang, P.E., was born November 27, 1889, in Decorah, Iowa, and has a B.S. in E.E. from Highland Park College. He is vice president in charge of engineering, system operation and maintenance for the Wisconsin Power and Light Company, Madison. Mr. Kallevang is a past president of the Wisconsin SPE. He is a life member of the American Institute of Electrical Engineers and also belongs to the Wisconsin Utilities Association, the Engineering Committee of Edison Electric Institute, the Salvation Army Advisory Board, and other groups.

Wisconsin. Harold C. Trester, P.E., was born in Sheboygan, Wis., July 3, 1911. He received a B.S. in C.E. from the University of Wisconsin in 1935. Since 1948 he has been associated with C. R. Meyer and Sons Company, general contractors in Oshkosh. Prior to this Mr. Trester was with the Wisconsin Highway Commission from 1935 to 1939; engineer for Cook & Brown of Oshkosh from 1939 to 1942 and 1945 to 1948; and District Structural Engineer with the U. S. Engineers, Savannah, Georgia, from 1942 to 1945. He has been active in both the Fox River Valley Chapter and the Wisconsin SPE, having served as chapter president in 1949 and state director in 1950. He is a member of Tau Beta Pi, other engineering societies including ASCE and ACI.

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With Our Members . . .

West Virginia News

Twenty-First Convention Marked By Many Professional Highlights

A roster of distinguished speakers, including Dr. N. W. Dougherty, Virgil E. Gunlock, J. O. Mattson, and Dr. W. W. Hodge, attracted a large representation of West Virginia engineers to the State Society's 21st annual convention, held at the end of August at The Greenbrier in White Sulphur Springs. West Virginia President George W. McAlpin presided at the meeting which also featured outstanding professional discussions, the regular business session, and a varied social program.

Dr. Dougherty, a past vice president of NSPE and currently president of the American Society for Engineering Education, as well as being dean of engineering at the University of Tennessee, was the speaker for the main banquet. He chose as his subject, *Freedman's Brew in an Industrial Age*. The banquet also was highlighted by the presentation of special certificates to the past presidents of the West Virginia Society.

Mr. Gunlock, an NSPE vice president and chairman of the Chicago Transit Authority, addressed the meeting on the topic, *The National Society of Professional Engineers and Its Job*. Dr. Hodge, who is president of the West Virginia State Registration Board, dealt with various phases of engineering registration in his address; while Mr. Mattson, president of the Automotive Safety Foundation of Washington spoke on *Transportation—Keynote to Progress*.

President McAlpin also served as chairman of the General Convention Committee, assisted by Royal C. Bundy, Leslie C. Gates, Paul M. Hutchinson, Ross B. Johnston, and Harry G. Kennedy. The Ladies' Convention Committee was headed by Mrs. McAlpin, assisted by Mrs. Evan L. Harris, Mrs. C. W. Hathaway, and Mrs. Ross B. Johnston.

Your '55 Vacation Should Include Philadelphia

"Plan your 1955 vacation so that you can be in Philadelphia from June 2nd to June 4th."—That is the advice being given to all NSPE members by the engineers of the Philadelphia Chapter, PSPE, who are already working hard on preliminary plans for NSPE's 1955 Annual Meeting scheduled for their city at that time.

"Here is one of those rare occasions," they remind you, "when you can mix your business and your family's pleasure—visit some of the country's oldest historic shrines; see the country's new steel center, 'Delaware Valley, U.S.A.'; and, after the NSPE meeting is concluded, travel on for a shore vacation at one of the famous South Jersey beaches, only an hour or two away by car."

That is very good advice indeed. So keep those dates in mind and plan to BE IN PHILADELPHIA, JUNE 2-4, 1955.

Calif. Legislation Is Meeting Topic

Jack Long, president of the California Legislative Council of Professional Engineers, was the featured speaker at the September 21st dinner meeting of the East Bay Chapter of the CSPE. He discussed various matters before the State Legislature which are of interest to engineers.

The meeting was held in Oakland.

The chapter has also recently announced the selection of Alex Nadell to head its National Engineers' Week Committee.

Paul N. Doll Becomes Missouri Executive Sec'y

J. W. Hubler, president of the Missouri Society of Professional Engineers, has announced the election of Paul N. Doll of Jefferson City, Mo., to the post of executive secretary of the MSPE.

Mr. Doll, an agricultural engineering graduate of the University of Missouri, has most recently been employed as manager of the Missouri Limestone Producers Association. He has also been in charge of agricultural industries for the Missouri Division of Resources and Development and has worked for the University of Missouri's Agricultural Extension Service.

The new executive secretary is a member of Tau Beta Pi and various other engineering, fraternal, and civic groups. He has been chairman of public relations for the Jefferson City Chapter of the MSPE and held the same office in the state society in 1953-54.

Unique Record In Father-Son Memberships

The Grand Valley Chapter of the Michigan Society of Professional Engineers is laying claim to a unique record in having five sets of fathers and sons on its membership roster. They are E. S. Brewer and Robert Brewer; Glen McIrvay and Robert McIrvay; Paul Nelson and Lawrence Nelson; George Sidwell and Kenneth Sidwell; and O. L. Rydland and Lt. Leiv Rydland, U.S.N.

. . . more news on page 37

EDUCATORS MEET—Dr. N. W. Dougherty (above left), dean of engineering at the University of Tennessee, was photographed as he was being welcomed to the West Virginia SPE Annual Meeting by Dean Roland P. Davis (right) of West Virginia University's College of Engineering. The West Virginia educator introduced Dean Dougherty as the main banquet speaker.

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Restricted to Registered Professional Engineers . . . Directory Continued on Next Page

Delaware SPE Members Are In The News

Three members of the Delaware Society of Professional Engineers have recently been designated for educational honors and civic appointment, according to word from Delaware President Thomas B. Evans. One of the three, Harvey H. Plank, has recently received an honorary Doctor of Engineering degree from Clarkson College. In addition, Roger W. Fulling has been commissioned by Governor J. Caleb Boggs as a member of his Civil Defense Advisory Council, and Frank T. Lynch has been appointed a member of the Delaware State Board of Registration for Professional Engineers and Land Surveyors.

Quality Control Is Lecture Topic

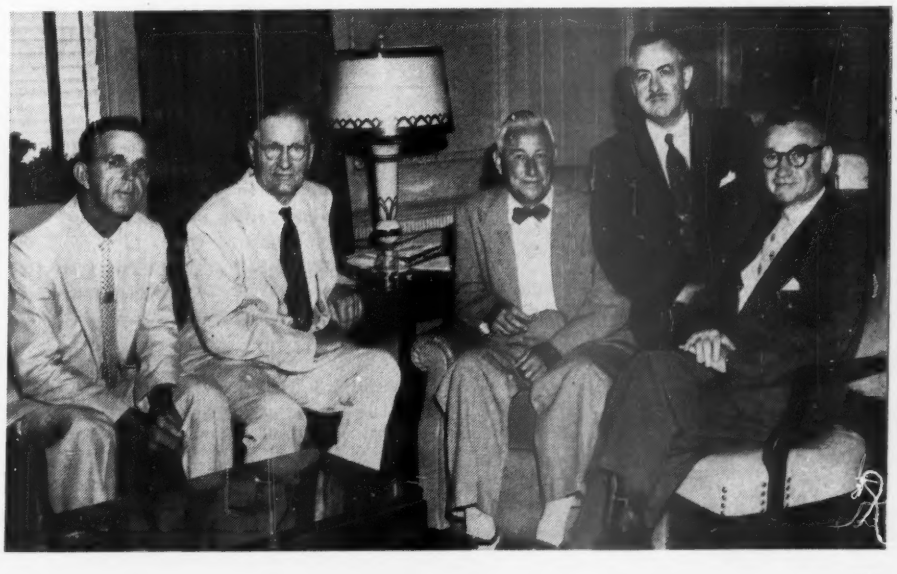
The first meeting of the 1954-55 season, sponsored by the Northeast Chapter of the Pennsylvania Society, featured a lecture on *Quality Control.* The speaker was Carl Larson, a member of the faculty of Pennsylvania State University in Scranton.

His talk covered the fundamental concepts of statistical quality control and the relationship to the engineering function of management.

Airport Tour On North Shore Agenda

An inspection tour of the Logan International Airport at East Boston was a feature of the September 30th meeting of the North Shore Chapter of the Massachusetts SPE. Following the tour the members and their guests were served dinner in the Promenade Restaurant, and the evening's program was concluded with the showing of an aviation movie.

. . . more news on page 39



N. C. REGISTRATION BOARD — Pictured at the right are the members of the newly-appointed North Carolina Registration Board for Engineers and Land Surveyors. They are, l. to r.: W. G. Brown, a consulting engineer; Grady S. Harrell, a land surveyor; Arvin Page, an engineer from industry; and Robert B. Rice and Walter J. Seeley, both educators. All except Mr. Harrell are members of the North Carolina Society and NSPE.

Dean Seeley has been elected temporary chairman; Arvin Page, vice chairman; and R. B. Rice, secretary. By law new officers must be elected each January.

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Leonard M. Todd Publishes Patent Book

Leonard M. Todd of New York City, a member of the New York State Society of Professional Engineers, has announced the publication of *Condensed Patent Practice,* a work he has keyed to the needs of the engineer who is interested in patents.

"The major objective of this work," says Mr. Todd, who is a chemical and mechanical engineer with New York registration, "is to collect in one source, information which presently requires hours of work to assemble and apply." Although it is intended chiefly for practice, he also points out that the information can be helpful in preparation for the examination required for practice before the U. S. Patent Office.

Copies of *Condensed Patent Practice* may be obtained from Mr. Todd at 24 Fifth Avenue, New York 11, N. Y. The price of the volume is $3.00 postpaid.

Traffic Engineer Speaks In Modesto

Douglas Carmody, traffic engineer for the City of Modesto, was the guest speaker at the September 10th dinner meeting of the Stanislaus Chapter of the California Society of Professional Engineers. The meeting was held at the Hotel Covell.

Mr. Carmody is a graduate of the University of California. He has also been traffic engineer for Alameda County.

Thomas L. Patton Is Meeting Speaker

Thomas L. Patton of the magnesium technical service and development division of The Dow Chemical Company, Midland, Michigan, was the guest lecturer at the September 16th meeting of the Lorain County Chapter of the Ohio Society. He spoke on *Magnesium—Treasure from the Sea,* and his lecture was also illustrated with slides and movies.

Letters

(*Continued from page 5*)

tics; the entire campaign conformed to the highest principle of professional conduct. Nevertheless, our action stirred up animosity; brought on us the suspicion of employers that we were a 'glorified' labor union; caused other technological societies to cooperate in a campaign to 'stop A. A. E.' Most disillusioning of all was the ingratitude of some 6,000 railroad workers who had joined to participate in collective bargaining, and who, as soon as they had won their increases in pay, withdrew their support from the Association.

" 'This Association is not a novice in collective bargaining, therefore. Nor are we, though disillusioned, discouraged. Never have we abandoned our conviction that the economic status of engineers can and *should be* improved by collective bargaining.' "

Mr. White's Son . . .

Dear Editor:

Reference is made to the letter signed by Mr. Edward J. White, P.E., of Newark, New Jersey, and published in the Letters column of the September, 1954, issue of the AMERICAN ENGINEER.

If Mr. White's son is looking for security outside of himself, he will not find it in the engineering profession, in the mechanics union, or in any other vocation. If he is in search of a group who will give him something he cannot give himself, he will not find them. If he is obsessed with the idea of obtaining "benefits" without assuming "responsibilities," he may find them temporarily in union membership. He can, as Mr. White points out, make $8,000 per year in the trades without assuming any responsibility. If he does not have the sense of "responsibility," which would make him provide his own old age pension, his own health insurance, his own life insurance, and other "benefits," he most certainly does not have the sense of responsibility necessary to the practice of engineering.

Assuming, however, that what Mr. White seeks for his son is opportunity, let me assure him that the engineering profession is full of opportunities.

I am a case in point. In June of 1949, I had served two and one-half years in the Army, had just received a degree in architectural engineering, and was 25 years old. Today, without benefit of a father, who died when I was 9, I am registered in two states, make $10,000 a year (incuding benefits), have the responsibility of directing the activities of six other graduate engineers, and am diligently looking for a 25-year-old man with an engineering degree and sense of "responsibility" who can do the same thing.

If Mr. White's son seeks real opportunity, he can find it, but not without assuming responsibility. No one will "give" it to him. I found it in the structural clay products industry. I don't know where Mr. White will find it for his son. Perhaps the boy should look for himself.

CLAYFORD T. GRIMM, P.E.,
Austin, Tex.

Add Mr. White . . .

Dear Editor:

Concerning the problem of Mr. Edward J. White, P.E., Newark, N. J., in the Sept., '54 issue of AMERICAN ENGINEER, in which he ponders having his son become an engineer:

There is a truly great answer to Mr. White's problem in a speech given by the Governor of Maryland, Theodore R. McKeldin, in Johnson City, Tenn., on May 24, 1954. There is a reprint of this speech in a magazine called "Vital Speeches," issue of July 15, 1954. I believe that the Newark, N. J., library will have a copy of this periodical.

Every young man should learn a trade. A man thus develops a profound respect for the dignity of labor. Every young man should learn how to act as a citizen; then he will appreciate our American way of life. A college education is an added, desirable, feature.

There are many colleges which offer a youth the opportunity to work at a trade, learn good citizenship, and satisfy his thirst for knowledge at one and the same time. These same institutions have turned out some fine engineers.

PETER A. SEWARD, P.E.,
Swampscott, Mass.

Religion's Role . . .

Dear Editor:

The comments in the article "If I Were a Young Engineer Today" struck me as superficial. Religion and morals are basically involved in such questions regarding a philosophy of life.

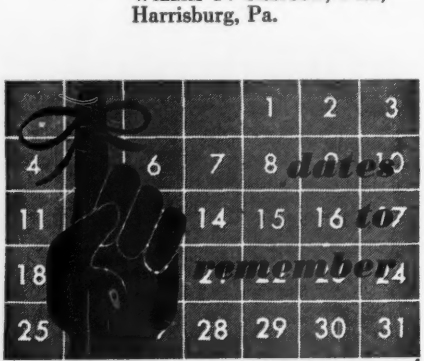
If you believe that we are placed here on earth to work out our salvation, one's life work can be thought of as a sort of game. This game will test our mettle and keep us occupied and out of mischief. There are no restrictions on our conduct as long as we fulfill our responsibilities and keep God's laws.

Now the comments of the outstanding leaders fit in, for in justice we must work hard for our pay. The game is more interesting if we study to know the rules, past records, trends and possibilities.

There is nothing wrong with being a successful leader, if charity and humility prevail. Yet seeming failure may be the best thing for us in God's omniscient plan.

Furthermore, our game need not be highly competitive, but might be nothing more than a hobby or useful pastime. It will serve the same purpose.

WILLIM P. SIMPSON, P.E.,
Harrisburg, Pa.



Virginia Society of Professional Engineers — Annual Meeting. October 9. Cavalier Club, Virginia Beach, Virginia.

NSPE Fall Board Meeting—October 15, 16. Hotel Fontenelle, Omaha, Nebraska.

Missouri Society of Professional Engineers—Annual Meeting. October 22, 23. Statler Hotel, St. Louis, Missouri.

NSPE Spring Meeting—February 18-20, 1955. Hotel Barringer, Charlotte, North Carolina.

NSPE Annual Meeting—June 2-4, 1955. Belleview-Stratford Hotel, Philadelphia, Pennsylvania.

More on Education . . .

Dear Editor:

I noticed in the July issue of AMERICAN ENGINEER, a comment on engineering education by Mr. Carroll D. Billmeyer, P.E., Kingston, Rhode Island, and it in turn complimented comments by Mr. George C. Barnes, Jr., P.E., Blacksburg, Virginia.

Being in the engineering education field I was much interested in their comments, especially so since I am in complete agreement. My purpose for writing this is to call attention of these gentlemen to a report that was published in 1938 by the Carnegie Foundation for the Advancement of Teaching. The title of the report is "The Student and His Knowledge" and it is called Bulletin No. 29. The authors were William S. Learned and Ben D. Woods. . . .

One of the things in the report which is of interest to me is the results of the relative standing of the students (first as sophomores in college and later as seniors) in examinations in Fine Arts, Foreign Literature, General Science, and Social Studies. The work of the students of five specific degree programs are presented. . . .

These examinations were given in 1928, 1930 and 1932. They were given to the students as sophomores and then two years later to the same groups as seniors. The report showed a better average score for the entire group as seniors than as sophomores and showed the engineers at about the same level in the subjects shown above relative to the College of Arts students as sophomores. I would like to quote a statement made by the authors of that report.

". . . with the exception of engineering, the average number of semester hours of credit in the major subject for each of the first 14 majors . . . was about 28 and none was over 35. The engineers, on the contrary, secured their creditable scores in the non-scientific subjects of the test in spite of an average of 79 hours spent in their technical curriculum and crowded chiefly into the two years immediately preceding the examination.

"To explain this, it is believed that the group is for the most part the result of unusual selection carefully maintained. Such minds naturally tend to learn more than merely what the curriculum requires; they are inclined to organize and retain better than others what they learn."

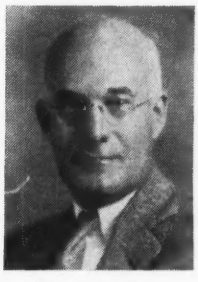
Other things of interest could be quoted from the report but my main point is that we have ample evidence that engineering type education is a good method for training the mind and that we should not let those who major in non-technical fields argue that we should add more non-technical subjects in lieu of engineering subjects. No one would argue that the engineer has no use for the non-technical knowledge but in the limited college training period we should not de-stress the engineering subjects. A well trained mind can get the non-technical knowledge for himself much easier after getting the technical training than the non-technically trained people can get the technical knowledge.

Many of the arguments, in my opinion, are the result of a defensive maneuver to try to protect non-technical training. If an engineering student can spend the time, he certainly should get a greater knowledge in other areas.

BYRON E. SHORT, P.E.,
Professor of
Mechanical Engineering,
U. of Texas,
Austin, Tex.

Strictly Business

Personalities . . . MELLON-STUART COMPANY, Pittsburgh contracting engineering firm, has announced the election of H. A. SAURBREY to the newly-created position of executive vice president. . . . DR. LOUIS G. DUNN has become associate director of the new Guided Missile Research Division of THE RAMO-WOOLDRIDGE CORPORATION, Los Angeles electronics research and development firm. . . . E. B. SEVERS has been appointed development engineer in the Barberton, O., Erection Department of THE BABCOCK & WILCOX COMPANY'S Boiler Division. . . .



Mr. Saurbrey

The NATIONAL GYPSUM COMPANY, Buffalo, N. Y., has appointed LEONARD L. HANK to the newly-created position of general production manager in charge of gypsum, paper and insulation board plants, according to an announcement by MELVIN H. BAKER, board chairman. EUGENE W. ODENWALDT has become general production manager in charge of the firm's paint, rock wool, lime, asbestos and metal lath plants; and CHARLES H. DWYER has been named director of plant industrial relations. . . . RICHARD T. ORTH has joined the WESTINGHOUSE ELECTRIC CORPORATION as vice president in charge of the company's Electronic Tube Division. . . . The RODNEY HUNT MACHINE CO., Orange, Mass., has announced the appointment of VERNON J. LIBERTY as assistant manager of its Industrial Rolls Division.

Mr. Baker

C. A. CARPENTER has been named system planning engineer for the PENNSYLVANIA POWER & LIGHT COMPANY, Allentown, Pa., following the retirement of NICOLAS M. SMELOFF. The latter now plans to do consulting work in electric power systems. . . . RICHARD W. HELMIG, director of manufacturing for the HARRIS-SEYBOLD COMPANY, Cleveland, O., has announced the appointment of RICHARD S. PURINTON to the newly-created position of defense products manager. . . . New staff appointments by STONE & WEBSTER ENGINEERING CORPORATION, Boston, have been announced by T. C. WILLIAMS, executive vice president, as follows: EDWARD E. BIGELOW, assistant engineering manager; OLCOTT L. HOOPER, chief hydraulic engineer; MYRTON H. CUTLER, chief structural engineer; and LESLIE O. WAITE, chief electrical engineer. The latter three succeed respectively GEORGE R. STRANDBERG, ERNEST A. DOCKSTADER, and RAYMOND R. WISNER, all of whom have been named consulting engineers by the firm. . . . H. P. ALBRECHT, president of the WACO MANUFACTURING COMPANY, Minneapolis, Minn., has announced the appointment of DEAN B. CHENOWETH to the post of manager of manufacturing and the selection of WALTER J. JORDAN to act as works manager for the recently-completed scaffolding plant in Cleveland, O.

Mr. Purinton

E. T. LARSEN and DR. W. C. RUECKEL have been named vice presidents of the HENRY J. KAISER COMPANY. They will make their headquarters at KAISER ENGINEERS' main offices in Oakland, Calif., where Mr. Larsen will be manager of engineering and Dr. Rueckel will serve as manager of development and sales. . . . KAISER ENGINEERS have also announced the appointments of SAM RUVKUN and J. E. HUGHES as assistants to the vice president. . . . COL. PHILIP I. BAKER, recently retired from Army service, has become the new head of the Structural Division of CARROLL E. BRADBERRY AND ASSOCIATES, consulting engineers of Los Altos, Calif. . . . T. O. LIEBSCHER, president of LE ROI COMPANY, Milwaukee, Wis., has announced the appointment of JACK E. HEUSER as vice president in charge of sales. . . . WILBUR H. NORTON, president of R. M. HOLLINGSHEAD CORPORATION, has announced the appointment of EDWARD F. LODGE, JR., as general traffic manager at the corporation's Camden, N. J., headquarters plant. . . . WILLIAM O. RILEY, formerly assistant superintendent of the Anderson, Ind., mill of ANACONDA WIRE & CABLE CO., has been promoted to superintendent of the newly-expanded Anaconda mill at Orange, Calif. . . . WESLEY S. THURSTON has joined the advertising and promotion staff of the COPPER & BRASS RESEARCH ASSOCIATION in New York City.

►

Operational Expansion . . . Formation of a new Building Products Division by THE STANDARD PRODUCTS COMPANY, Cleveland, O., has been announced by R. E. MCINTYRE, executive vice president. J. P. DACEY has been appointed sales manager of the new division and will direct activities from the company's general sales offices in Detroit. . . . A new $4,000,000 asphalt refinery has been put into operation at Columbia Park, O., near Cincinnati, by the AMERICAN BITUMULS & ASPHALT COMPANY of San Francisco, according to an announcement by C. W. TURNER, president of the firm. FLOYD L. REED, district manager for the company, will make his headquarters at the new refinery. . . . The CELOTEX CORPORATION will build a new and larger gypsum board mill and expand its other facilities at its Port Clinton, O., plant, according to an announcement made at the firm's Chicago headquarters by OTIS S. MANSELL, president. . . . The new plant that will produce SEIBERLING RUBBER COMPANY'S new rigid plastic, Seilon PVC, at Newcomerstown, Ohio, is now going into production, according to word from ROBERT S. PRICE, general manager of the Plastics Division.

DR. L. K. GULTON, president of GULTON INDUSTRIES, INC., electronics, materials research, precision instruments, and systems engineering firm, has announced the completion of two new buildings, totaling 6,000 sq. ft., at the Metuchen, N. J., plant. . . . A new $1,250,000 addition for the manufacture of shell molded castings is nearing completion at the LYNCHBURG FOUNDRY COMPANY, Lynchburg, Va. Limited production is already in process, and it is expected that the plant will be in full operation by the end of October. . . . The DELUXE SAW AND TOOL COMPANY of High Point, N. C., a subsidiary of ROCKWELL MANUFACTURING COMPANY, Pittsburgh, Pa., has announced the opening of a new Midwest regional sales office and new service facilities in Chicago. ROBERT L. FORD has been named Midwest regional manager. . . . LEO M. HARVEY, founder and chairman of the board of HARVEY ALUMINUM, has announced that the Torrance, Calif., plant has completed the first phase of its expansion program in the Impact Extrusion Division.

What's New

AMERICAN ENGINEER Oct., 1954
1121 FIFTEENTH ST., N.W., WASHINGTON 5, D. C.

Please send information on Item 1 to:

Name ..... (Title)
Company .....
Street .....
City and Zone ..... State.....

OFFICE-SIZE WHITEPRINTER — Item 1

A new office-size COPYMASTER high volume production ammonia-dry whiteprinter is announced by Peck & Harvey Manufacturing Corp. of Chicago. Specially-designed extra-width capacity and other features provide on-the-spot use for a wide variety of reproduction or duplicating needs. According to P&H, the COPYMASTER saves up to 40% of typing-copying costs and makes exact copies immediately available from a single original. Can produce a thousand or more letter or legal size copies per hour.

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Please send information on Item 2 to:

Name ..... (Title)
Company .....
Street .....
City and Zone ..... State.....

SEAL-LESS STRAPPING SPEEDS SHIPMENTS — Item 2

Introduced recently, the remarkable new Inland Seal-less method of strapping is providing a new speed and economy. The secret of this new economy and convenience in handling actually lies in the machine used. In two simple operations, this machine tensions the strapping, cuts it to exact length void of waste, and effects a mechanical interlocking of the two overlapping ends of strapping that has consistently tested between 77 per cent and 86 per cent of the strength of the strapping itself. The economy of this new method is said to result from the elimination of seals of any kind, and time and cost of applying seals.

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Please send information on Item 3 to:

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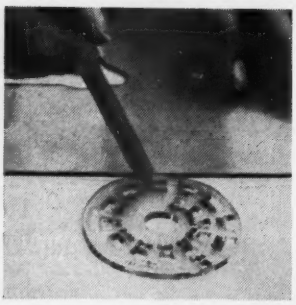
City and Zone ..... State.....

SPACES LINES ACCURATELY — Item 3



Accurately spaced lines for layout, architural and engineering drawing, lettering, and cross-hatching are made with a new low-cost drafting instrument called the Linemaster. Announced by Dri-flo, the Linemaster is a small, heavy plastic disk having slots to receive a pencil or scriber point. The 17 slots produce parallel lines 1/64", and 1/32" to ½" from a base line in steps of 1/32". Each slot is precisely located in relation to the circumference of the disk to within .002" of the dimension marked on it.

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Please send information on Item 4 to:

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RUBBER BASED MASONRY COATING — Item 4

The most recent addition to the line of Preco Chemical Corporation's products is a masonry coating, which incorporates the excellent properties of a synthetic rubber based resin, Goodyear's famous Pliolite S-5. Known as PLIOTONE, this coating has found phenomenal success as a superior finish for surfaces such as concrete, stucco, asbestos shingle, brick, hot plaster and other masonry finishes. It is extremely durable, and resistant to water and chemical attack. It is non-oxidizing, mildew resistant, and drys rapidly to a smooth, long-lasting finish. PLIOTONE's rubber base is inert chemically to the high alkalinity of various types of masonry and therefore will not crack, chip or peel.

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Please send information on Item 5 to:

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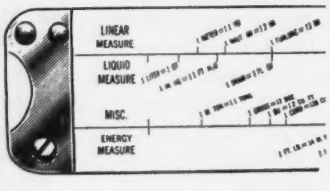
SINGLE-SETTING SLIDE RULE — Item 5



A New Conversion Slide Rule bearing 64 Linear, Liquid, Energy and Miscellaneous Factors on one side plus a complete Trig Scale arrangement on the reverse side consisting of A, K, DF-CF, T, CI, C-D and L scales. By merely "Positioning" a Conversion Mark opposite an Index Mark, any conversion is automatically set and read on the C, D, CF or DF scales on this new Model 903-T Single-Setting Conversion Rule.

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